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The 1924 meetings of the American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will also be held in Buffalo, during the week of August 25th.

For Association Roster see pages x, xii and xv

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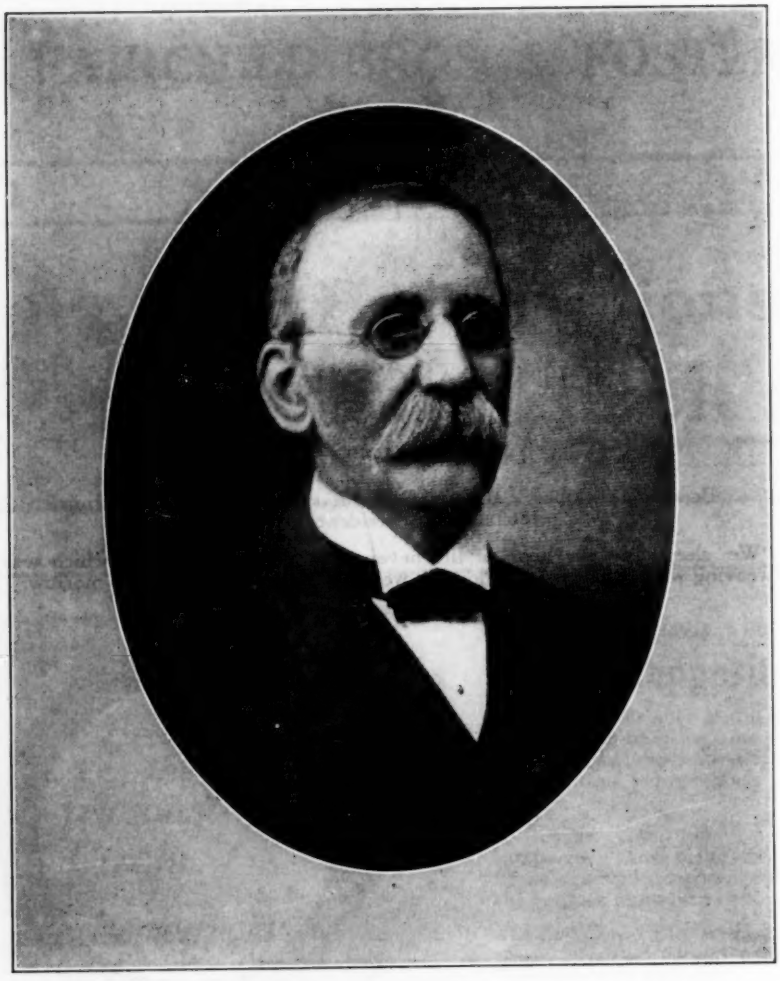
JOHN FRANCIS HANCOCK
1834–1923

BALTIMORE, MD.

Became a member of the American Pharmaceutical Association in 1863 and Its President in 1873

"We sleep, but the loom of life never stops; and the pattern which was weaving when the sun went down is weaving when it comes up to-morrow."



JOHN F. HANCOCK.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XII DECEMBER, 1923 No. 12

JOHN F. HANCOCK.
1834–1923.

John Francis Hancock, one of the foremost figures of American Pharmacy, died of pneumonia at his residence in Baltimore on November 12, 1923, in his ninetieth year, after an illness of but four days.

He was born at Forest Home, Anne Arundel County, Md., on September 9, 1834, the son of John Hancock and Mary Leeke (Hancock). The old Hancock home, which is still standing, and in possession of the family, is an old stone house built by Stephen Hancock, who came to St. Mary's in 1664, the first settlement in Maryland, and is on Bodkin Creek immediately opposite the plantation that was originally settled by the ancestor of Charles Carroll of Carrollton.

His early education was had in the district schools and at the Forest Home Academy, where he prepared for Dickinson College with the idea of entering the ministry, but his father and several brothers and sisters having died in a typhoid-malarial epidemic during the summer of 1853, he was compelled to give up that plan for his life-work. On January 1, 1854, he went to Baltimore and was apprenticed in the drug store of Dr. J. L. Large, at Caroline and Baltimore Streets. A year after this Dr. Large was succeeded by Landis & Hancock, and shortly afterwards John F. Hancock became the sole proprietor of the business, which he conducted for many years. In 1899 he gave up the retail drug business and with his two sons began the manufacture of medicated lozenges and other pharmaceutical specialties. In 1903, his son William having died, he established the firm of John F. Hancock and Son, and is survived by his widow, three daughters and his son, James E. Hancock.

He was graduated from the Maryland College of Pharmacy in 1860 and became a member of the college the following year. Soon thereafter he became a member of the Board of Examiners and was president of the Maryland College of Pharmacy, 1872–74. He was given the honorary degree of master of pharmacy in 1871 by his alma mater. In 1907 the University of Maryland conferred upon him the honorary degree of doctor of pharmacy, and in 1908 the Philadelphia College of Pharmacy awarded him its honorary degree of master in pharmacy.

During his career he held many positions of prominence, serving as president of the American Pharmaceutical Association and as president of the Maryland

Pharmaceutical Association. In 1885 he was elected lecturer in pharmacy at the Baltimore College of Physicians and Surgeons, and served as member of the Maryland Board of Pharmacy for twelve years. He was an honorary member of the Pennsylvania Pharmaceutical Association, of the New Jersey Pharmaceutical Association and of the New Hampshire Pharmaceutical Association, and an active member of the Southern Maryland Society, and of the Sons of the American Revolution. He was a member of the School Board for Baltimore City for over ten years and for over twenty five years a member of the Board of Directors of the Baltimore Eastern Dispensary, and of the Board of Trustees of St. Mary's Industrial School. He was also the vice-president of the Free Summer Excursion Society, Baltimore's oldest and best known institution for the relief of the indigent poor.

Sixty years ago he became a member of the American Pharmaceutical Association and has rendered it a lifetime of devoted and valuable service. He was elected president for 1873–74. His ideals for pharmacy were of the highest. He was especially concerned in advancing the professional interests of pharmacy. In his presidential address he said:

"Pharmacy is one of the special branches of learning, which, when its votaries understand aright, they will confine their labors more closely to its specific duties. The better acquaintance with the several duties of these branches and the mutual dependence of each will come only through higher education, the application of which must be general, and the construction of mutual codes of ethical and aesthetical habits. The time has already arrived when the pharmacist is required to be something more than an artisan if he desires to perform his duties intelligently and in accordance with scientific principles, otherwise he is a pretender without the hope of honor, a detriment to the public good and an obstacle in the way of his more progressive brother.

"Pharmacy, as at present practiced in all parts of the United States, is so thoroughly disorganized in detail that it is perplexing to those who are endeavoring to advance its professional interests. The pharmacist is required to be a merchant and a professional practitioner of his science, and by this subsidy of interests he is frequently found incapacitated to harmonize his several duties. Those who aspire to equal honors in the two phases of their business experience should carefully guard against the rock upon which so many have been wrecked, and which constitutes an impediment to progress. By uniting the two interests on a just and generous platform, and letting them serve as handmaids to each other, in harmonizing of diverging interests, very much can be accomplished towards advancing commercial and professional pharmacy."

"Much water has passed under the bridge," so to speak, since these lines were penned, fifty years ago. To-day commercial pharmacy dominates professional, and if this dominance progressively increases, pharmacy will become a lost art. We cannot go back to the old days if we would, and probably would not if we could, but we should ever bear in mind relative values and govern ourselves accordingly. The profession of pharmacy is the backbone of pharmaceutical practice.

When the movement to establish a memorial to his friend, the late William Procter, Jr., the "Father of American Pharmacy," was inaugurated by the Association in 1904 it was but natural that Dr. Hancock should have been made chairman of the Committee on the William Procter, Jr., Memorial Fund. The result of his activity has been accumulation of the present trust fund now amounting to about $11,000. He was continued as chairman of the committee until his demise. When the memorial is finally established it will be a monument not only to Procter, but also to Dr. Hancock's fidelity to the cause he fathered and for which he labored with such persevering efficiency for more than a score of years.

John F. Hancock was a man of unusual force of character and he was pleased to think that much of his moulding was due to his Scotch-English ancestry—that blending of the Celt and the Anglo-Saxon in which survive the brave and generous impulses of the one with the prudent and steadfast characteristics of the other.

He thought with Froude

"So far as one can look into that commonplace round of things which the historians never tell us about, there have rarely been seen in this world a set of people who thought more about right and wrong, and the judgment about them, of the upper powers—a conscientious sense that the worldly virtues are nevertheless very necessary virtues; that without these honesty, for one thing, is not possible, and that without honesty no other excellence, religious or moral, is worth anything at all."

The activating motive of his life was honesty—honesty to himself and to his fellow man. He confided in his friends and never betrayed a confidence placed in him, no matter what advantage he might secure thereby. While he never pressed his views unduly, he was firm for the right as he saw the right, even though he stood alone. He flattered nobody, he persecuted nobody, he belittled nobody, but was always frank and open. He was ever the courteous, kindly, tolerant, Christian gentleman and never the politician. He gave everybody his due, was true to his friends, generous to his adversaries; enemies he had none. The dominant notes of his personality were kindness and service; he lived for others. Like Abou Ben Adhem, he loved his fellow men more than he loved himself, and the memory of his being will stay with us through the years to come to stimulate and inspire, and through us, others. Just as the ripples on the water from a stone cast upon its surface may widen and extend on and on to infinity, so may the influence of a life like John F. Hancock live long after he has passed.

In concluding his presidential address to the American Pharmaceutical Association in 1874, Mr. Hancock referred to the passing of many members of the Association during the previous year, stating that "Like autumn leaves they have fallen in every direction, leaving with us only the golden tints of well-spent lives." He noted especially the death of William Procter, Jr., and paid a beautiful tribute to the latter's classic research work for the science and art of pharmacy, urging that his example be followed, so that "when the autumn of our lives shall come, it may be exclaimed of us.

'O, what a glory does this world put on
For him, who, with a fervent heart, goes forth,
Under the bright and glorious sky, and looks
On duties well performed, and days well spent;
For him the wind, aye, and the yellow leaves
Shall have a voice, and give him eloquent teachings,
He shall so hear the solemn hymn, that death
Has lifted up for all, that he shall go
To his long resting-place without a tear.' "

As the poet would write, John F. Hancock, of fervent heart with duties well performed and days well spent, has heard the voice of nature and the sweetly solemn hymn of death and has gone to his resting-place without a tear—with a smile upon his lips and immortality in his eyes.

The life of John F. Hancock has enriched his age. As he stood upon the threshold of the world to come he

"Calmly looked on either life, and here saw
nothing to regret, nor there to fear."

J. W. ENGLAND.

EDITORIAL

E. G. EBERLE, Editor 253 Bourse Bldg., PHILADELPHIA

A THOUGHT FOR CHRISTMAS.

"Be tolerant, be just, and fear naught. Hide not your face from the light, nor cover it in the dark. Deal squarely with an open and even hand, labor faithfully and in a cheerful spirit. Guard your own rights no more jealously than those of your fellows. Be steadfast in your loyalty to right. And the universal reign of Good-Will shall bring Peace on Earth as we journey along the path of happiness, through the pleasant and fruitful valley of service."

A DEDUCTION FOR THE NEW YEAR.

Pausing on the threshold of 1924 and looking back to 1874 a record of progress in the sciences in which pharmacy shares may be read that foretells far greater achievements and successes during the next era, and places relatively greater responsibilities upon pharmacists. *Morale* has been an influence in these accomplishments, applying the definition—"belief in one another." The greater opportunities before us require that the belief and faith be put into more general practice, for within ourselves is every factor for success and the people have a right to demand the best service from such united endeavor. E. G. E.

"IT IS BETTER TO DOCTOR AT THE BEGINNING THAN AT THE END."

"MANY men, many evils." The profession of pharmacy when aroused has been known to take up the sword and buckler for the right, and to quit itself with credit. The Food and Drugs Act, the Harrison anti-narcotic law, and the pharmaceutical code of ethics are notable illustrations of such activity. Its experience must lead it to recognize the dangers incident to pregnant times. Danger lurks in the uncontrolled and ill-advised efforts of volunteers whose enthusiasm for an embryo cause reaches a pitch of quasi-religious fervor and whose works result in abortion.

An instance of this was exhibited in the last legislature in Pennsylvania, in House Bill No. 348. Certain physicians domiciled in Philadelphia and Pittsburgh, anticipating more deliberate action contemplated by the American Medical Association, put forward a bill that would have placed every laboratory in the State under the control of a physician. The bill limited every "laboratory procedure for the diagnosis or treatment of human disease" in such a way that it must thereafter be performed "under the direct supervision and upon the personal responsibility of a physician." Legal opinion was to the effect that the wording of the bill applied to pharmacists, pharmaceutical chemists, and manufacturing pharmacists.

An assay of this proposition is easy. The pharmacist is the one professional man with whom society is on the most familiar terms. While it places a white tie upon its minister, and a black gown upon its judge, and good clothes along with the benefit of the doubt as to social standing upon its physician, society asks its pharmacist to earn his living by merchandizing during the intervals between the times of public need for his professional services. When the public is ready, the pharmacist in his part as a professional man must be ready; and, be it said to his credit, he is. The professional man who has also a successful business is not likely to submit without complaint to an order to practice his profession "under the direct supervision and upon the personal responsibility" of any man of any other pro-

fession. In this particular instance, the pharmacist has met the legal requirements for the practice of his profession in a way not demanded of physicians; and as to his business, that is his own business.

House Bill No. 348 went further and placed in the hands of physicians the right to inspect all laboratories (a kind of blanket search warrant) along with the power to suspend (without appeal) the operation of any laboratory deemed unsatisfactory. This was a subversion of Americanism. One fundamental characteristic of the structure of our Government is the separation of the executive, the administrative and the judicial functions; but in the matter of laboratories this bill sought to combine these three and to centralize them in the medical profession.

Here is food for thought for pharmacists. *Sunt bona, sunt quaedam mediocria, sunt mala plura.* Of course enthusiasts make up a certain proportion of the crop, and of these a certain percentage cannot be trusted. Pennsylvania has no monopoly in this type of enthusiast. Hence legislatures the country over must by organized effort be watched lest that which born in full time might become healthy and a joy, be born prematurely a monster or a corpse. House Bill No. 348 in Pennsylvania was killed in committee; let it be to all concerned like the dead hawk nailed on the barn door—a warning and a sign of vigilance in defense.

DAVID WILBUR HORN

DRUG TREATMENT: PAST, PRESENT AND FUTURE.

THE prelector, this year, of the inaugural sessional address at the British Pharmaceutical Society's School of Pharmacy, was Dr. W. E. Dixon, well and favorably known pharmacologist and author of textbooks and contributor of monographs on pharmacological subjects to other publications, among the latter that in "The British Pharmaceutical Codex." The subject of his address was "Drug Treatment: Past, Present and Future." The speaker at the October meeting of the Philadelphia Branch, A. Ph. A., was Dr. Horatio C. Wood, whose interest in and service for pharmacy and pharmacists is comparable with that of Dr. Dixon; the work of the former and that of his antecedents have contributed largely to American pharmacy for more than a century. Dr. Dixon is an honorary member of the Pharmaceutical Society of Great Britain, and Dr. Wood is an active member of the American Pharmaceutical Association.

The subject of the paper by the latter, "The Present Trends of Therapeutics as Illustrated by the New Drugs Recommended for Admission to the Pharmacopœia," is printed in this number of the JOURNAL, A. PH. A.

Brief comments are made on Dr. Dixon's address; the excerpts which are included present parts of the discussions only. He cited the fact that animal products have assumed a great importance in pharmacy and pharmaceutical chemistry and impressed the need of knowledge of animal anatomy and physiology as essential to the educated pharmacist. His reference to the human system as a drug laboratory follows:

"Our whole outlook on treatment has been altered by recent and gradually accumulated knowledge that the animal body elaborates its own drugs, stores them generally at the seat of

formation and doles them out to the tissues to meet the needs of the animal economy. Some of these are crystalline alkaloids, like adrenaline from the suprarenal capsules and thyroxine from the thyroid gland. Others, like insulin and pituitrin, have yet to be prepared in a pure form, but we know that the former changes glucose in some way so that its oxidation can be continued by other processes in the body, and that its absence results in an excess of sugar accumulation in the blood, a condition termed diabetes; pituitrin, I have reasons for believing, is the chemical agent in the normal woman which causes the uterus to contract. Ovarian activity excites the pituitary gland and determines the liberation of pituitrin into the circulation, and it is well recognized that its use in obstetrics has largely superseded that of ergot. I cannot offer a more convincing example of the inner meaning of drug actions. The normal functions of the body are regulated at least partly by these natural drugs, and it may be that all functionings are of this nature, and the object of a nerve supply is to localize the liberation of the drug in some definite situation."

In commenting on the cure of disease due to the introduction of some extraneous factor, he said that diseases due to protozoa may be cured by destroying the causal agent of the disease by drugs, but the action is not necessarily brought by the direct effect of the drug on the causal agent—the organic compounds have no decided effect on the spirochætes of syphilis in the test-tube, but they destroy them in the body; emetine does not kill the amœba of tropical dysentery, except in the human body; microörganisms causing pneumonia are destroyed by ethylhydrocuprein.

In discussing the mechanism of the action of drugs, Dr. Dixon presented some physico-chemical problems that await solution and in which absorption through living membranes has an important part—"Why is sodium chloride absorbed so readily into the blood and why is magnesium sulphate not absorbed?" "Why should iron be absorbed with such difficulty and arsenic with such ease?"

He said that "the vast group of hypnotic drugs differing widely in their chemistry have one common factor—the power of diffusion into living cells, comparative insolubility in water, and a greater solubility in fat and fat-like compounds."—The most powerful hypnotics are those which combine a very slight solubility in water with a very high solubility in "brain lipoid."

The following lines are from the concluding remarks of Dr. Dixon:

"I have endeavored to show that the future of curative treatment lies in drugs, and that the discovery of new drugs or methods of treatment can only be attained by those who have had the requisite scientific training."

Dr. Wood's address contains the following statement:

"It is only a few years ago that the Rabbis of the pharmacological sanhedrim were sneering at the idea of specifics in medicine. To-day, the search for new remedies is frankly a hunt for these contemned curatives."

Underlying professional attainments there must be adequate education. The individual needs not only experience but a knowledge which enables him to understand what he sees and does. There is a widening field of medical science before us in which medicine, chemistry and the divisions of special and direct concern to pharmacists will collaborate because thereby the public is best served—progress has been made in such coöperative endeavor. E. G. E.

THE PRESENT TRENDS OF THERAPEUTICS AS ILLUSTRATED BY THE NEW DRUGS RECOMMENDED FOR ADMISSION TO THE PHARMACOPŒIA.*

BY HORATIO C. WOOD, JR., M.D.

The search for new remedial agents has nearly always been guided by certain general principles, or accepted theories of drug action. Thus, in medieval times there was a wide-spread belief that for every disease the devil had let loose on the earth God had provided a specific antidote and that all that was necessary was to test out successively each of the millions of plants in each disease until the specific antagonist was found. In the latter part of the last century the physiological action of drugs was the rallying point of therapeutics, and pharmacologists devoted their time to studying the effects of any plant which seemed to be poisonous with the idea that these physiological studies might lead to the therapeutic use. The type of this investigation was the epoch-making work of Magendie, the father of pharmacology, whose studies of the cause of convulsions produced by the poison nux vomica led to the introduction of strychnine as a remedy.

In every age we find a group of scientists so filled with the conceit of their time that they hold in contempt the learning of the past and mistake the theories of the day for proven facts. The whirligig of pharmacology is an extraordinary manifestation of this evanescence of human logic. It is only a few years ago that the Rabbis of the pharmacological sanhedrim were sneering at the idea of specifics in medicine. To-day, the search for new remedies is frankly a hunt for these contemned curatives. To be sure, they attempt to cover their shame by inventing a new word which is etymologically inappropriate, chemotherapy. Nearly all drugs are "chemotherapeutic" agents; for the word means, if anything, that the therapeutic effect is by chemical action. If the truth be told, chemotherapy, as generally employed, is but another name for what our fathers called "specifics," a term which we have well nigh discarded as meaningless. The proper designation of this group of drugs is the term etiotropic, *i. e.*, turning towards the cause.

ARSPHENAMINE.

The present furore of seeking new specific, etiotropic, agents through experiments on the lower animals may be attributed chiefly to the concept of Professor Ehrlich. Starting with the known toxic effects of arsenic on protozoa he instigated a systematic search for some compound of arsenic that should retain its toxicity for these pathogenic organisms but be harmless to the human host. The most tangible success of his patient research was a compound which was first introduced under its laboratory number 606 and is now known in this country as arsphenamine. The toxic effects of arsenic seem to be not a property of the element arsenium but of the arsenous oxide ion. The compounds containing arsenium in a pentavalent state are apparently non-poisonous, either to man or germs, but many of them are slowly reduced by animal tissues to the trivalent state and become poisonous. If we can find a compound that is more rapidly broken down by the tissues of the protozoa than those of the mammalia we have a drug which can be used as a specific

* Read before Philadelphia Branch, A. Ph. A., October meeting.

curative in infections by this group of organisms without endangering the life of the patient. Although arsphenamine has not completely realized the hopes of its discoverer, of a drug that could be used in large enough dose to cause at once a complete sterilization of the body, it yet represents a great advance in our methods of treating certain of the protozoal infections, notably syphilis and relapsing fever.

The therapeutic and chemical properties of arsphenamine and its various derivatives are so well known that it is needless for me to describe them in detail. I simply call attention to them as illustrative of one of the trends of modern therapeutic investigation.

CHAULMOOGRA OIL.

An agent, another new admission to the Pharmacopœia, whose value, however, was not discovered by experiments on the lower animals but by the old-fashioned method of clinical trial, is the oil of chaulmoogra. The value of chaulmoogra oil in leprosy has been known to the Asiatics for centuries; an ancient legend reports that a king of India, living in the days before the time of Buddha, was cured of his leprosy by eating the fruits and leaves of the kalaw tree. Later the oil of this tree was widely used in Burma, both externally and internally, in the treatment of this dread disease. In 1819 the plant, from the seeds of which this oil was obtained, was described by Brown under the name of *Gynocardia odorata* and this source was commonly recognized for nearly 100 years. In 1899 a French pharmacist, Deprez, first showed that the true chaulmoogra seeds were not derived from the Gynocardia, and the following year an English botanist named Prain attributed them to a new species of *Taraktogenos* which he named in honor of Kurz, who had first collected the plant, as *T. Kurzii*. The investigations of Joseph F. Rock, of the United States Department of Agriculture, have left no room for doubt that the true oil of chaulmoogra, as used in India, is obtained partly from this species and partly from the allied genus of *Hydnocarpus*, trees that are native in Siam and Burma. The Government has issued a bulletin in which Mr. Rock describes most interestingly his field search for the source of this oil with botanical description of the various allied plants.

Of the curative properties of chaulmoogra oil in leprosy there is to-day no room for doubt. The virtues of the oil seem to depend upon peculiar fatty acids of a type which had not hitherto been described in any fixed oil. The two most important of these acids, separated by Dr. Frederick B. Power some years ago, are named chaulmoogric and hydnocarpic acids. Recently, the sodium salts of these acids, which have the advantage of being soluble in water, have been used hypodermically with considerable evidence of success.

CHLORINE COMPOUNDS.

Somewhat allied to the exploration in the field of etiotropic agents of which I have been speaking, is the search for new surgical disinfectants. Nearly all of our germicidal substances belong to what are known as protoplasmic poisons; *i. e.*, they are toxic to all forms of living organisms. They kill, therefore, not only the bacteria but also the tissue cells. The result of this latter action is to lessen the natural resistance of the body to bacterial invasion so that the application of germi-

cidal solutions often does more harm by their destructive action on the human cells than they do good by their effects on the pus-producing germs. An interesting study by Lambert in 1916, upon human connective tissue cells artificially cultured, showed that practically all of the surgical germicides, except iodine and chlorine, were more poisonous to the human tissues than they were to the bacteria and hence their value in disinfecting wounds must be extremely limited.

The activity of chlorine as a disinfectant has long been known but the instability of solutions of chlorine and the difficulty of preparing solutions of definite strengths practically prevented the use of this element as a surgical disinfectant until studies of Dr. Dakin and Dr. Carrell, during the war, led to the introduction of a modification of the old Labarraque solutions. The essential differences between Dakin's solution and the old form of sodium hypochlorite are, first, that Dakin's solution is practically neutral instead of strongly alkaline, and, second, that its content of available chlorine is definitely determined by chemical assay at the time of preparation. One great disadvantage of the solution was the rapidity with which it lost its available chlorine so that it must be freshly assayed almost every day. Exactitude of strength in Dakin's solution is a *sine qua non;* if it be too weak in chlorine it will not exercise the proper degree of antibacterial effect; if it be a little too strong it will destroy the vitality of the tissue cells.

Because of the inconvenience of assaying this chlorine solution Dr. Dakin was led to undertake a research for a compound which would liberate free chlorine in the tissues but that would be stable under ordinary circumstances. This investigation led to the introduction of three sulpho-chloramine compounds. Chlorazene is the sodium salt of toluene-sulpho-chloramine and was first made by Chattaway in 1905. This compound is generally known as chloramine which is unfortunate because the substance NH_2Cl has likewise received this name. Because of the fact that Dakin popularized both the solution of sodium hypochlorite and the sulpho-chloramines there has been some confusion in the minds of many as to the distinctions between these various chlorinated preparations. The importance of distinguishing between aqueous solutions of sodium hypochlorite and of sodium toluene-sulpho-chloramine has been clearly pointed out in an excellent article by Dr. Smyth. The essential difference lies in the fact that sodium hypochlorite is useful not merely because of its power of destroying bacteria but also because of its solvent action on necrotic tissue which makes it of a special use in large wounds where there is much destruction of tissue. For small wounds that are comparatively clean chloramine is preferable, because it is less irritant and more convenient. It is, therefore, of great importance that pharmacists clearly distinguish between these two chlorine compounds as their field of usefulness is quite distinct.

The acid radical, of which chloramine is the sodium salt, is insoluble in water but has been used, under the name of Dichloramine-T, both as a surgical disinfectant and antiseptic application in diseases of the nose and throat, dissolved in liquid petrolatum. Because, however, of the affinity of this latter substance for chlorine it is necessary that it first be saturated with chlorine before being used as a solvent as otherwise it would lead to the decomposition of the dichloramine-T. The Revision Committee have recommended the recognition of such a chlorinated mineral oil.

SILVER PROTEINS.

The value of silver as a disinfectant application to mucous membranes has long been known. Its peculiar usefulness lies in the fact that it retains its germicidal properties to an extraordinary extent, even when greatly diluted and in the presence of protein material. Behring has shown that in albuminous fluids silver nitrate is a more powerful disinfectant than mercuric chloride; he states that a 1 to 10,000 solution of silver nitrate still possesses the power of killing the highly resistant anthrax spores in the blood serum if exposure is sufficiently prolonged. The disadvantages of silver nitrate as a clinical germicide are, first, its local irritant effect and, second, the action of chlorides in precipitating the silver salt. In order to overcome these objections chemists have advised a number of combinations of silver with various protein substances, in many of which the metal is in a colloidal form. The great difference in germicidal and irritant properties of these preparations has been so puzzling that their exact field of usefulness has been settled only as the result of prolonged clinical observations. Why, for example, should argyrol with a silver content of 21 per cent. be so inferior both in disinfectant power and irritant properties to protargol with less than half this proportion of silver?

Twenty-five years ago, Kronig and Paul brought forth evidence that the germicidal power of metallic salts depended not so much upon the actual percentage of metal present as upon the degree of ionization; the action of the salts is due to the free metallic ions. Pilcher and Sollmann have recently attempted to apply this theory to the silver proteinates. From studies on the antiseptic powers of these compounds they deduce the opinion that despite the colloidal nature of the proteinate solutions a portion of their silver is in the ionic condition. Protargol, with a total silver content of 8.3%, contains over 7% of ionic silver, while argyrol although it contains approximately 21 per cent. of metallic silver yields only $^1/_3$ of one per cent. of ionic silver. There is, however, in these silver compounds a small amount of "available" silver, which possesses antiseptic property, besides the easily ionizable metal; so that protargol is only about 15 times as actively germicidal as argyrol, instead of 21 times as would be indicated by the proportion of ionizing silver. Pilcher and Sollmann also found an enormous difference in the germicidal power of different samples of the same brands of silver proteinates; apparently small differences in the process of manufacture threw larger or smaller quantities of silver into the non-ionic form. These authors also believe that the degree of irritation of the silver compounds is likewise due to the proportion of ionizable metal.

If both the germicidal and irritating properties of these silver salts depend upon the proportion of ionic silver, wherein lies the advantage of a protein silver preparation over a correspondingly diluted solution of such an inorganic salt as the nitrate? There is reason to believe that these silver protein compounds are slowly decomposed and may exercise a degree of bacteriostatic action disproportional to their amount of ionic silver. In other words, where a slow, persistent effect is desired an equal degree of antiseptic action is obtainable with less degree of irritation by the non-ionizing forms than by silver nitrate. On the other hand, where a very rapid action is desired comparatively little is gained by the use of the col-

loidal types of silver. The silver proteinates may, therefore, be arranged into groups according to the amount of ionic silver present. Protargol type represents, on the average, about 7% of ionic silver (compared to about 63% of ionic silver in the nitrate), while the argyrol type represents approximately $^1/_3$ of one per cent. of ionic silver.

SOMNIFACIENTS.

Another important pharmacologic trend exemplified in the new Pharmacopœia is the working out of the relationship, which undoubtedly exists, between the chemical structure of organic drugs and their effects on body function. While we are still a long way from apprehending the fundamental laws involved in this relationship we have collected a sufficient number of observed coincidences in certain groups of drugs to be able to formulate certain arbitrary rules that work out more or less successfully in practice.

One of the earliest of these to be practically utilized was the observation that all of the somnifacients contained a single carbon atom found in the open chain arrangement—*i. e.*, they may be regarded as derivatives of methane having for one of its side groups an aliphatic derivative, such as methyl, ethyl, or propyl. Furthermore, it has been noted that the introduction of a carbamic radical greatly lessens the danger of depression of the vital centers in the medulla. The first of this series of important hypnotics was urethane, still official under the name of ethyl-carbamate. Although one of the safest drugs of the class, it has been found to be clinically lacking in power. Recently more complex compounds of this type have been found which exercise a powerful depressant influence upon the higher cerebral centers with similar slight effect upon the vital nervous system.

The first great success of this type was the well-known veronal, or, to give it its American name, barbital. This drug would probably have received recognition in the present Pharmacopœia had it not been for certain legal difficulties. I might say in passing that one of the most gratifying things of the work of the present Revision Committee has been the spirit of coöperation manifested by nearly all the owners of patents on the modern synthetic drugs.

By substituting a phenyl for one of the ethyl groups in barbital we have the substance pheno-barbital or, as it is more commonly known, luminal, which has attracted so much attention. There does not seem to be any convincing evidence that this drug is superior as a hypnotic to the older veronal but it has been found clinically to be a very useful agent in the treatment of epilepsy. While experience is still too limited to make a dogmatic designation of its precise place in the management of this baleful affection, the present evidence indicates that its value is like that of the bromides, a palliative not a curative, and from my own reading I would gather that its effects are on the whole not much, if any, better than those of the bromides. It does afford, however, a valuable alternative for these drugs in those cases in which for any reason the bromides may be unsuited.

A very interesting series of these narcotics contain an atom of bromine in one of their side groups. The thought which was apparently back of the construction of these molecules was that of obtaining the ionic action of bromine, but their effects, while differing very distinctly from those of barbital, are manifestly not due to a bromine action. In the first place, the dose of bromine which is introduced is too

small to exercise any action, and in the second place, Takeda has brought experimental evidence to indicate that they are not broken up in the body. Nevertheless their clinical effects are quite distinct from the other hypnotics. The two important characteristics of these compounds are: first, that they have distinct analgesic properties, which is not true of the hypnotics as a group; and, second, in small doses they produce a condition of euphoria without evident tendency to drowsiness. The representative of this group recommended for official recognition is carbromal, known more familiarly under the trade name of adalin. It has a field of marked usefulness distinct from that of either barbital or luminal.

LOCAL ANESTHETICS.

A number of years ago pharmacologists reached the conclusion that the local anesthetic power of cocaine is due to the presence of a benzoyl radical containing a nitrogenous side group. On this theory chemists have prepared a host of similar anesthetics in the hope of obtaining one which would be free from the dangers of poisoning. While we have not yet obtained complete success in preparing a non-toxic local anesthetic the two members of this group which have been recommended for admission into the Pharmacopœia represent great advances.

Procaine, which was originally introduced under the trade name novocaine, according to the studies of Eggleston and Hatcher, is about $^1/_3$ as poisonous as cocaine, when injected intravenously; when injected hypodermically the difference is still more marked—according to Closson the hypodermic fatal dose of novocaine for guinea pigs is about 10 times as large as that of cocaine. Although novocaine appears to have less power of penetrating mucous membranes than cocaine, when injected either subcutaneously or into nerve trunks, according to Sollmann, it is practically equal in anesthetic power.

The other anesthetic which has been recommended for admission into the Pharmacopœia is benzicaine, more commonly known under its trade name of anesthesin. It has a very different field of usefulness from that of novocaine or cocaine. Its peculiar value depends upon the fact that it is practically insoluble in water and, therefore, when applied to a raw surface is not easily washed away by the body fluids. Moreover, its toxicity on hypodermic injection appears to be less even than that of procaine; according to Closson when benzicaine is injected hypodermically, dissolved in olive oil, the enormous quantity of 1 Gm. per kilo is required to produce fatal results in the guinea pig, which makes it about $^1/_{20}$ as poisonous as cocaine. Anesthesin is used especially for its effects on open wounds, ulcers and other raw surfaces. It may be applied either in the form of a solution in one of the fixed oils or, mixed with some inert substance such as starch, as a dusting powder. It has been used with much benefit to relieve the pains of gastric ulcer in doses of 3 to 4 grains.

BENZYL BENZOATE.

The investigation of the relationship between chemical structure and physiological action led to the introduction of a relatively simple compound that a few months ago created a veritable furore among the medical profession. Dr. Macht, finding that some of the opium alkaloids were active depressants to the involuntary muscles while others were not, sought to find the reason for this difference. Noting

that all those which affected unstriped muscles contained a benzyl group in their molecule he postulated the proposition that their effects were due to the benzyl radical. This observation led him to suggest the possible utility of the simple compounds of benzyl and the introduction of benzyl benzoate. Because of the scientific standing of Dr. Macht and the plausibility of his reasoning benzyl benzoate acquired, with a most extraordinary rapidity, a tremendous vogue for the relief of various spasmodic disorders such as asthma, high blood-pressure, gallstone colic and similar conditions.

The cause of its failure to realize the first high hopes, I believe, lies in a peculiar oversight of a fundamental principle. As the action of benzyl benzoate is directly on the muscle fiber it is manifest that if one gives a large enough dose to paralyze the offending muscle he will produce a similar paralysis of all involuntary muscles. Thus in order to relieve an asthmatic spasm of the bronchi we have to relax also the arteries, causing a marked fall in the blood-pressure, and to relax the intestinal muscles to such an extent as to check the peristaltic movements. In other words, in exorcising one devil we let loose two or three new devils in the body of the unfortunate sufferer.

TANNIN DERIVATIVES.

The two tannin preparations which have been newly admitted are no novelties. Both of them have been used under proprietary names for some years. The idea that was back of the introduction of these compounds may be briefly summed up as follows: astringent action of a drug is the result of precipitation of proteins in the tissues; tannic acid when taken by the mouth will be largely neutralized, *i. e.*, precipitated, by the proteins in the stomach and, hence, exercise little astringency in the intestinal tract; if we can administer some compound of tannin that is insoluble, and therefore non-astringent, in the stomach but is broken up in the intestines it would have great superiority over the other vegetable astringents in the treatment of diarrhea. A large number of compounds have been placed upon the market for which these advantages have been claimed. That they have not entirely fulfilled the theoretical expectations is shown by the fact that the vegetable astringents continue to be largely used; if these insoluble tannins were capable of doing what theoretically they ought to they would have almost driven the old vegetable astringents off the market. The explanation of their partial failure has recently been shown to be that none of them correspond to the claims that the manufacturers have made. For instance, in such a fundamental, physical property as solubility in water Dr. Leech has shown that none of them correspond to the claims of the manufacturers. Every one of the eight such compounds examined was at least partially soluble in water. Their solubility ranged from 2.4 to 20 parts in 100 of water. In most cases they were still more soluble in artificial gastric juice although the claim is made for them that they are practically insoluble in the stomach secretions. Moreover, their solutions in many cases are distinctly astringent. However, Sollmann has shown that they are dissolved so slowly that it is probable that, under ordinary circumstances, they would be mechanically carried out from the stomach into the intestines before sufficient had been dissolved to exercise any considerable astringent action in the stomach. Moreover, the claims made that they are decomposed in the intestinal tract and exert

their full astringent action has also been shown in many cases to be erroneous. The ones that most nearly correspond to the theoretical requirements are the acetic esters of tannin, of which there are two varieties on the market. While he found considerable difference in the individual specimens the best of them approached very closely to the ideal requirements. The hydrolysis of acetyl-tannin in the presence of sodium bicarbonate is, however, so slow that when taken by the mouth the most of the drug would be well down in the intestinal tract before its full astringency would be developed. For this reason it was deemed advisable to admit to the Pharmacopœia not only this derivative, but one of the albumin tannates whose astringent action is most marked in the duodenum.

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FURTHER STUDIES OF THE RELATIVE RATES OF ABSORPTION OF DRUGS FROM THE LYMPH SAC AND THE MUSCLES OF THE FROG.

BY C. D. HIGLEY AND M. S. DOOLEY.*

In a previous communication[1] it was shown that the digitalis group of substances, as measured by their intensity of action upon the heart, are absorbed more rapidly and evenly from the muscles of the frog than from the lymph sac. Strychnine is also absorbed more readily from the muscles, as judged by the observation that convulsions come on much sooner, from a given sized dose, than if the drug is acting from the lymph sac. Also it was found that the minimal convulsive dose of strychnine, when given intramuscularly, is not sufficient to cause convulsions in the frog when administered by the other method.[1] The present paper relates the results of experiments upon the question of whether this difference holds, when other drugs are introduced by the two methods. Of course only those drugs that induce some definitely measurable outward change in the frog can be used for this purpose. Epinephrin happens to be one of these. Its dilating effect upon the pupil of the frog from systemic administration, as demonstrated by Meltzer,[2] has been used as a basis of comparison.

DESCRIPTION OF METHOD.

The animals were fastened upon a frog board, and, as soon as the pupil maintained a constant diameter, injections were made into the muscles of the thighs or into the lymph sac as a given experiment required. During the first five minutes thereafter readings were taken of the vertical diameter of the pupil at half-minute

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intervals, during the next five minutes at one-minute intervals, and at five-minute intervals thereafter until recovery. From the time of injection to the onset of dilatation is designated the latent period. The dosage and the time required to reach maximum pupil diameter for each method, as well as the duration of the effects, were tabulated throughout.

To demonstrate that our method had no appreciable influence upon the size of the pupil, a short series of experiments was undertaken, using normal salt solution in the same volume of dosage.

DISCUSSION.

It will be evident to the reader that, if by one method of administration the pupil undergoes more prompt dilatation than by the other, the drug has reached the eye in adequate concentration in less time by that method. Hence the rate of absorption has been more rapid. The factors mentioned, such as the time to reach maximum diameter, and the duration of the effect, are taken into account as of value, but the chief emphasis is laid upon the length of the latent period as a basis for our conclusions.

The accompanying tables and curves represent the average values derived from two series of experiments. One was carried out with maximum doses, according to Meltzer,[2] and one with approximately minimum doses, as nearly as we could determine. The drug was made up in normal salt solution, and 0.1 cc of a 1 to 10,000 solution or 0.001 mg. for each 20 Gm. of frog was injected, and, as in the experiments previously reported,[1] from a Luer tuberculin syringe. This was the standard dose in the first series for both intramuscular and for injections into the lymph sac. The dilution in the second series was 1 to 100,000 and the dose varied from 0.1 cc to 0.2 cc, or an approximate average of 0.00054 mg. per 20 Gm. of frog.

TABLE I.

	Lymph sac.	Intramuscular.	Per cent.
Normal diameter	2.10 mm.	2.14 mm.	
Latent period	3.10 min.	1.08 min.	187
Period of increasing pupil diameter	6.85 min.	14.00 min.	104.3
Maximum increase of pupil diameter	1.55 mm.	1.55 mm.	
Duration of maximum pupil diameter	20.90 min.	27.30 min.	30.6

TABLE II.

	Lymph sac.	Intramuscular.	Per cent.
Normal diameter	2.37 mm.	2.30 mm.	
Latent period	1.13 min.	0.75 min.	33
Period of increasing pupil diameter	4.56 min.	3.64 min.	25.2
Maximum increase of pupil diameter	0.26 mm.	0.28 mm.	
Duration of maximum pupil diameter	5.38 min.	8.68 min.	61.3

A summary of the results of the first series of experiments is shown in Fig. I, Table I, which are expressed in averages. The normal diameter of the pupil varied from 2.10 to 2.14 mm. The latent period for absorption from the muscles was 1.08 minutes, as against 3.1 minutes from the lymph sac, or 187% more rapid from the muscles. It required only 6.85 minutes for the maximum diameter to be reached in the case of the injections into the lymph sac, as compared with 14 minutes by the

other route, 104.5% faster in the case of the former method. While this was an unexpected result, yet it is felt that it does not constitute evidence against our contention of more rapid absorption from the muscles, as it is susceptible of more than one interpretation, whereas a shorter latent period signifies one thing only, more prompt absorption. The duration of maximum dilatation from intramuscular injections was 27.3 minutes as against 20.9 minutes for the other, 30.6% longer in the case of the former. Here again we have no satisfactory explanation for this relationship, unless it be that, owing to its well-known tendency to rapid loss of activity in the body, a less concentration of the drug reaches the eye from the lymph sac as the period of absorption continues. However this explanation may not apply in this instance.

Reference to the first set of curves in the figures will aid further in making these comparisons clear.

Epinephrin effects upon the frog's pupil:

Ordinate = Diameter Pupil in mm. (both curves)

Intramuscular curve—— Lymph sac curve- - - - -

In Figure I, Table II, involving the use of approximately minimum effective doses, the difference in the latent period was greatly reduced, but was still 33% shorter from intramuscular injections. The duration of the period when the pupil was increasing in diameter was shorter by 25.2%, than from injections into the lymph sac, the reverse of the effect of large doses in this respect, but the increase in diameter was the same by both methods. The duration of maximum dilatation for this series was longer in the case of the intramuscular injections by 61%, thus showing in this phase a similar time relation to that from large doses.

The curves, Series II, illustrate these various factors.

Viewing the results as a whole there are, as stated above, some facts that cannot be accounted for; some results which argue, so far as can be seen, until more can be known of their significance, neither for nor against our main contention, that absorption, in general, is more rapid from intramuscular injections. As was stated, the length of the latent period is taken as the real measure of this fact, and this has been found throughout, regardless of dose, to be shorter after intramuscular injections. One would expect the latent period to be longer for small doses, but this was found not to be so. Three possible explanations suggest

themselves: First, that of seasonal variation. The experiments with the larger doses were performed during the summer, at which time, in the case of the other drugs, such as the digitalis group, absorption is most difficult.[1] Second, another possible reason for it is the well-known styptic effect of epinephrin on the blood vessels locally. The stronger solutions might, in this way, retard their own rate of absorption, and thus not show the characteristic pupillary effect more promptly than a weaker solution which would not impede its own rate of absorption to as great a degree. Third, another factor operative in such a contingency, would be the well-known tendency for epinephrin to undergo rapid loss of activity, so that if its absorption should be interfered with in the manner suggested, that which enters the circulation would tend to be disposed of faster than additional amounts could enter, and thus the latent period would, of necessity, be lengthened until such time as absorption more than offsets elimination.

It is not intended in this connection to lay any particular emphasis upon the value of these experiments with reference to any action of epinephrin itself, but only in so far as they confirm our findings mentioned above with regard to the digitalis drugs.[1] If it is borne in mind that the official method of assay for the digitalis group requires that the drug be injected into the lymph sac, and that, as is well known, many samples cannot be successfully assayed by the method, on account of the fact that they are poorly absorbed from the lymph sac, the significance of our experiments becomes more apparent, as a further proof of the unreliable character of the present official method. However it may be stated that no such variability in the rate of absorption from the lymph sac was found in the case of epinephrin as in the case of digitalis.

In our previous article[1] on this question, we submitted much evidence to show that if the same size doses of digitalis were, instead, injected into the muscles a much more constant and positive result followed. Because of the very great pharmaceutical and therapeutic importance of the question involved, it seemed desirable to obtain still further evidence of the superiority of the intramuscular method in comparison with the official method. The results of the present experiments are offered, therefore, as further support of this fact developed in our earlier experiments.

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THE STANDARDIZATION OF GELSEMIUM.*

BY PAUL S. PITTENGER.

Although the amount of Veratrum and Gelsemium prescribed and used by the present-day practitioner is very small as compared with Aconite and some other cardiac depressants, these drugs are still used in appreciable quantities.

As stated in a recent paper,† "It is the opinion of the author that any drug

* Scientific Section, A. Ph. A., Asheville meeting, 1923.

† Pittenger, "The Standardization of Veratrum," read before the Scientific Section of the Penna. Pharm. Association, Bedford Springs, Pa., June 1923.

which is worthy of being used as medicinal agent should be standardized, if possible, by either chemical or biologic methods.

"Since the principle end to be accomplished by the assay of the drug or its preparations is to secure a *means of measuring* its therapeutic efficiency, a chemical method fails of its purpose unless some direct and constant ratio exists between the results obtained by the assay process and the therapeutic activity of the drug.

"For this reason a chemical assay is of no value unless the results obtained by the chemical assay parallel the results obtained by the biologic assay.

"Without a satisfactory biologic method it is almost impossible to determine whether or not the substance isolated by chemical methods bears any relation to the activity of the drug.

"For this reason I was interested in making a comparison between the results of the chemical and physiological assays of this drug and its preparations."

Chemical Investigation.—The chemistry of Gelsemium has been made the subject of a large number of investigations including the work of Kollock,[1] Maisch,[2] Eberle,[3] Wormley,[4] Coblentz,[5] Gerrard,[6] Thompson,[7] and others. These researches show that the drug contains two alkaloids, Gelsemine and Gelseminine.

In view of the fact that two different alkaloids are present, it was decided to determine whether or not an estimation of the total alkaloid would be an index to the therapeutic activity of Gelsemiun and its preparations.

With this object in view the following chemical methods were employed:

GELSEMIUM DRUG.

Assay for Alkaloids.—20 Gm. percolate with alcohol to exhaustion, concentrate to about 20 cc, dilute to 80 cc with water, add lead subacetate solution *q. s.* 100 cc. Filter off all possible, remove excess of lead with 2 Gm. dry Na_2HPO_4. Filter off 50 cc, make alkaline with NH_4OH, shake out with $CHCl_3$, evaporate, dry and weigh.

TINCTURE AND FLUIDEXTRACT GELSEMIUM, U. S. P.

Assay for Alkaloids.—Samples fluidextract 20 cc; samples tincture 200 cc. Finish like drug.

SOLID EXTRACT AND POWDERED EXTRACT GELSEMIUM.

Dissolve 4 Gm. in alcohol and finish like drug.

Tentative Chemical Standards.—By applying these chemical methods to the above samples of Gelsemium and its preparations, results were obtained leading to the adoption of the following tentative, chemical standards:

Drug	0.4 % total alkaloids
Tincture	0.04% total alkaloids
Fluidextract	0.4 % total alkaloids
Powdered Extract	2.0 % total alkaloids

Physiologic Action.—According to Cushny, Gelsemine is only slightly active, induces the same symptoms in frogs as Strychnine, but having no effect on mammals

[1] Kollock, *A. J. P.*, XXVII.
[2] Maisch, *A. J. P.*, 1869.
[3] Eberle, *A. J. P.*, 1869.
[4] Wormley, *A. J. P.*, 1870.
[5] Coblentz, PROC. A. PH. A., 1897, p. 225.
[6] Gerrard, *A. J. P.*, 1883, p. 258.
[7] Thompson, *Pharm. Era*, 1887, p. 3.

even when injected into a vein in very large quantities. Gelseminine, on the other hand, is a powerful poison which resembles Coniine in most of its effects.

The action of Gelsemium is, therefore, undoubtedly due to Gelseminine and not to Gelsemine, as far as mammals are concerned.

In view of the fact that the drug possesses a depressant action, the method employed for assaying Aconite and Veratrum on guinea pigs presents itself as a likely means of physiologic standardization. Therefore, about 14 years ago I carried out a series of experiments by making definite dilutions of fluidextract Gelsemium and then determining the smallest amount of the preparation per 250 Gm. body weight of animal required to cause the death of the animal within 24 hours when the preparation was subcutaneously injected.

It was found that the M. L. D. as determined by this method was in direct proportion to the dilution.

The experiment was repeated several times and it was found in each instance the M. L. D. paralleled the actual dilution.

As a result of these experiments we adopted the following method for the biologic standardization of Gelsemium:

BIOLOGIC ASSAY METHOD.

Animals.—Guinea-pigs in good physical condition and weighing from 180 to 400 Gm.

Preparation of Experiment.—The guinea-pigs are prepared for the injection by clipping or shaving the hair from about one square inch of the skin over the abdomen and painting the exposed portion with 5% Tr. Iodine. The pigs are then weighed and records kept.

Method of Injecting.—Injections are given subcutaneously in the abdominal region. In all cases the preparation should be sufficiently diluted, or concentrated, as the case may be, to make the dose injected measure not less than 0.5 cc nor more than 4 cc.

Actual Standardization.—Into a series of 4 guinea-pigs, inject 9/10, 10/10, 11/10, and 12/10 of the standard dose of the preparation to be standardized for each 250 Gm. body weight of guinea-pigs. The animals are then placed in cages and allowed to remain for twenty-four hours, when they are examined and a note made of those living and those which are dead.

The results of this preliminary test, in which the range of dosage is quite wide, enable the investigator to form some idea as to the strength of the preparation. Basing the dosage upon these results, other series of guinea-pigs are injected with progressively increasing or decreasing doses, as the case may be, still further diminishing the variation between doses, until the smallest amount is found which will prove fatal within twenty-four hours. The probable minimum lethal (toxic) dose of the preparation, unless it deviates considerably from that of the standard, is generally obtained by one or two series of injections. In order to determine whether or not this is the true minimum lethal dose, this result is checked by carefully injecting a new series of four pigs; two with the smallest dose that was found to kill, and two with the largest dose that did not kill. If, however, any of this last series show irregularities, further correction must be made.

Tentative Biologic Standards.—In order to determine the average M. L. D. of the drug and its various preparations, and thus set a tentative standard for assay

purposes, assays were made of all available samples of drug, and samples of the galenical preparations purchased from the different pharmaceutical manufacturing houses in the U. S.

As a result of these assays, the following tentative standards were adopted:

M. L. D. PER 250 GM. BODY WEIGHT OF GUINEA PIG.

Drug (in the form of Fluidextract).....	0.375
Tincture.....	2.5
Fluidextract.....	0.375
Powdered Extract.....	0.125

The assays showed a wide variation in the M. L. D. and, therefore, in the strengths of the various commercial preparations on the market and proved the necessity for standardizing preparations of this drug.

COMPARISON OF RESULTS OBTAINED BY THE CHEMICAL AND BIOLOGICAL METHODS.

In order to determine whether or not the results obtained by the above chemical methods would parallel results of the biologic assay it was decided to test different samples by both methods. Therefore, during the past 14 years, samples have been taken at different intervals and tested.

The results of these tests follow:

TINCTURE GELSEMIUM.

Sample.	Chem. Assay. Per cent.	Bio. Assay. Per cent.	Date.	Sample.	Chem. Assay. Per cent.	Bio. Assay. Per cent.	Date.
1	106	100	6-21-09	25	40	125	2- 9-14
2	98	75	9-13-09	26	35	55	2-27-14
3	130	200	10-18-09	27	97	200	3-16-14
4	175	200	10-18-09	28	85	208	5- 4-14
5	180	166	11-30-09	29	95	138	9- 3-14
6	134	125	2-10-10	30	57	200	12-11-14
7	122	111	7-11-10	31	102	125	5-10-15
8	139	111	9-12-10	32	121	138	11-18-15
9	78	97	11-24-10	33	45	138	11-29-15
10	100	83	12- 2-10	34	125	111	6- 6-16
11	140	178	12-16-10	35	135	131	12-26-16
12	115	156	1- 3-11	36	205	312	12-26-16
13	102	69	2-15-11	37	125	90	2- 9-17
14	142	66	4-12-11	38	97	125	7- 5-17
15	96	83	7- 1-11	39	110	108	3-11-18
16	120	100	10-15-11	40	135	250	2- 8-19
17	102	111	1-17-12	41	110	138	2-22-19
18	171	90	2-14-12	42	130	138	8- 8-19
19	125	125	5-27-12	43	75	125	1-30-20
20	128	125	1-11-13	44	157	125	5-22-20
21	107	192	1-28-13	45	170	166	7- 1-20
22	155	200	6-20-13	46	150	208	7- 1-20
23	127	142	7-22-13	47	180	166	7- 1-20
24	134	208	7-22-13	48	90	138	6-15-21

FLUIDEXTRACT GELSEMIUM.

Sample.	Chem. Assay. Per cent.	Bio. Assay. Per cent.	Date.	Sample.	Chem. Assay. Per cent.	Bio. Assay. Per cent.	Date.
1	115	150	4-22-09	5	100	200	11-30-09
2	100	150	5-25-09	6	100	100	12-13-09
3	125	65	7- 6-09	7	137	117	2- 4-10
4	112	250	10-18-09	8	116	94	2- 5-10

Sample.	Chem. Assay. Per cent.	Bio. Assay. Per cent.	Date.	Sample.	Chem. Assay. Per cent.	Bio. Assay. Per cent.	Date.
9	103	75	4–27–10	26	105	115	6–12–13
10	134	120	8–11–10	27	151	151	7– 7–13
11	110	100	8–18–10	28	109	125	9–17–13
12	110	125	10–31–10	29	95	151	12– 4–13
13	74	68	2–15–11	30	73	54	5–23–14
14	112	94	2–16–11	31	113	187	5–10–15
15	129	140	5–18–11	32	62	187	12–14–15
16	171	94	7– 1–11	33	130	151	7– 7–16
17	187	215	8–24–11	34	110	215	2– 1–17
18	99	166	11–28–11	35	120	215	3– 6–17
19	104	94	3– 7–12	36	235	312	12–21–17
20	141	140	6– 3–12	37	150	151	12– 5–18
21	145	187	8– 3–18	38	107	187	4– 1–19
22	96	115	1–11–13	39	80	94	10–21–20
23	8	54	2–17–13	40	100	125	11– 8–20
24	80	54	5–10–13	41	130	150	5–22–22
25	105	65	6– 3–13				

POWDERED EXTRACT GELSEMIUM.

Sample.	Chem. Assay. Per cent.	Bio. Assay. Per cent.	Date.	Sample.	Chem. Assay. Per cent.	Bio. Assay. Per cent.	Date.
1	109	125	7–28–09	10	170	194	11–11–16
2	166	250	10– 8–10	11	140	71	2– 9–17
3	111	250	11– 2–10	12	138	208	9–17–17
4	127	147	7–14–11	13	102	125	5– 6–21
5	122	312	11–17–11	14	70	156	8– 9–21
6	103	178	1–15–12	15	306	277	4–14–22
7	107	125	1–30–13	16	286	125	5–16–22
8	150	178	5– 4–14	17	85	96	12–28–22
9	171	208	7–20–15	18	100	125	4– 2–23

It will be noted from the above results that in about one-half of the samples examined, there is a parallelism between the results obtained by the two methods of assay. In the other 50% of the samples examined, however, there are marked discrepancies. As above stated, the drug contains two alkaloids, Gelsemine which is only slightly active, and Gelseminine which is a powerful poison.

The fact that the toxicity as determined by the minimum lethal dose on guinea pigs does not parallel the total alkaloidal content of the drug would indicate, therefore, that these two alkaloids are not always present in the drug in the same proportion. The determination of total alkaloid is therefore apparently not a true index to the clinical value of Gelsemium or its preparations.

Conclusion.—The results of these experiments would tend to prove, therefore, that we are without a reliable chemical means of accurately standardizing Gelsemium preparations, but that they can be standardized by physiologic means as outlined in this paper.

PHARMACODYNAMIC LABORATORIES,
H. K. MULFORD COMPANY, PHILA.,
AUGUST 16, 1923.

RECENT INVESTIGATIONS ON ANTILUETIC DRUGS.*

BY H. B. CORBITT AND C. N. MYERS.

Constitution and physiologic action are the two important factors which determine the partition coefficient of a drug in its distribution in the tissues and in the body fluids. A third and very important factor deals with the physical structure of the drug in its solid phase, its solution phase, and finally in its combining action in the biological medium. In other words, drugs possess an organotropic and a parasitotropic action, and the ratio between these two factors determines an index which renders a decision as to whether or not the drug is safe for therapeutic use—a favorable proportion of organotropy and parasitotropy.

On this basis the Ehrlich chemoceptor and side chain theory still find application in the present use of drugs.

At this time it is only possible to discuss briefly the antiluetic drugs now available. To preface these remarks it should be stated that arsenic in some form should be synergized by means of mercury. At present, no single drug is at our disposal which will dispense with the other. Intramuscular injection of mercury finds preference in the hands of the largest dispensers of this drug. Physiologically it seems preferable to use the soluble form of mercury prepared in a suitable manner to eliminate pain to the greatest degree. The salicylate and the benzoate find application in the hands of those who prefer the insoluble salts of mercury.

The work of Cole is significant in pointing out the failure of absorption in some instances. The other mercurials have been adequately discussed in the *Journal of the American Medical Association* and contain the consensus of those skilled in their therapeutic application. There has been no outstanding therapeutic work in mercurials beyond that of the above author.

At the present time bismuth is receiving considerable attention among foreign syphilologists and many very satisfactory reports have appeared, darkened by the usual bismuth forms of acute intoxication such as convulsions, dyspnea, and bradycardia; the chronic type showing diarrhoea, lassitude, albuminuria, and ulcerative stomatitis.

Bismuth preparations may probably find a place in antiluetic therapy, replacing mercury in some instances where the patient has shown a Wassermann fastness or possibly an intolerance to mercury medication. Bismuth has the advantage of possessing both acid and basic properties thereby adapting it to cases where there is need of an amphoteric condition.

There are three distinct types of bismuth compounds available. Bismuth quinine iodide, bismuth oxybenzoate, and the alkali salts of tartrobismuthate comprise the group now being utilized. The literature on this subject has been very comprehensively reviewed by us in the *American Journal of Syphilis*, April 1923.

Bismuth is entirely too toxic for intravenous use, and finds application only in intramuscular therapy. Oily suspensions of the soluble and the insoluble tar-

* Read before the Scientific Section, American Pharmaceutical Association meeting at Asheville, N. C., Sept. 3 to 8, 1923.

trobismuthates have been used, but in most instances they have been accompanied by considerable pain.

Bismuth alone like mercury shows practically no trypanocidal activity in sublethal doses, as pointed out by Myers and Corbitt (1923).

In the field of arsenicals a much greater variety of research has been carried out. Ehrlich "606," Salvarsan, or, in official terms, arsphenamine, without doubt continues to be the most potent drug in the series with the exception of the silver salt. To this group has been added a variety of neoarsphenamines differing from the original in physical, chemical and therapeutic characteristics.

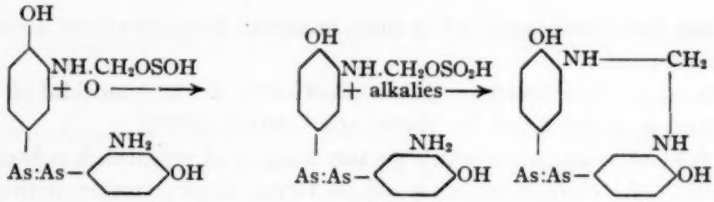
In 1913, Bertheim, in his excellent monograph on arsenic compounds, pointed out the essential features in preparing the large series of arsenicals which had been accurately described in the scientific and patent literature found mainly in the *Berichte der deutschen chemischen Gesellschaft.*

There remain two types of arsphenamine available ranging from a hot water soluble product to one readily soluble in cold water. It should be distinctly pointed out that the method of preparation of the solution is not interchangeable and under no circumstances is it advisable to alkalinize the solutions while they are warm on account of the tendency toward increased toxicity. Lake of the Hygienic Laboratory has shown conclusively that the toxicity of arsphenamine is decreased by allowing the solution to stand 15–20 minutes after the alkali has been added to the solution. This feature finds clinical application in reducing the table reactions on account of the formation of a more ideal solution.

In the next group are found the heterogeneous neoarsphenamines. Bertheim (1913) first pointed out these possibilities from a chemical point of view, indicating that a normal mono-methylene sulphoxylate and a normal di-methylene sulphoxylate compound could be formed as a result of the condensation of salvarsan and sodium formaldehyde sulphoxylate. No extensive clinical and therapeutic comparisons were made, thereby leaving the devious way open for a series of mixed compounds although the original patent calls for the production of the mono-substituted product.

As to the arsenic content of the neoarsphenamines, theoretically the mono-substituted product should contain 32.1 per cent. arsenic, whereas the di-substituted product contains 26.4 per cent. arsenic. During the condensation of the dihydrochloride of dioxy-diaminoarsenobenzene with sodium formaldehyde sulphoxylate considerable quantities of physiologically inert, inorganic salts are formed. When this solution is precipitated by means of alcohol, ether, or acetone, some of the physiologically inert, inorganic impurities are precipitated simultaneously with the neoarsphenamine. The presence of these products tends to lower the arsenic content without disturbing the pharmacodynamic arsenic which is present. It is quite absurd to indulge in some of the commercial subtleties employed to suggest a purification of the product or produce one of high arsenic content.

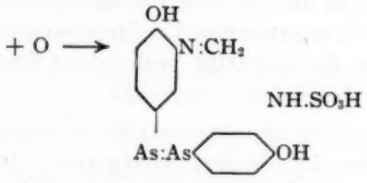
Attention was first called to the mono- and di-substitution products of neoarsphenamine by Macallum (1920) who pointed out that the original Ehrlich "914" was a mono-substitution product. The observation of this author in its relation to sulpharsphenamine is so pertinent that the formulas are here reproduced.



Dihydroxy-diamino-arseno-benzene-N-monomethylene sulphoxylic acid

-methylene sulphurous acid

-methylene compound



Corresponding sulphamic acid

Dale (1922) considering the problem toxicologically and clinically took up this matter for the British Medical Research Committee and stated that the composition of Neo-compounds of English origin differed so widely from various manufacturers that there was need of control and he describes the situation as follows:

TWO DISTINCT CLASSES OF NEOSALVARSAN TYPE.

"A short experience with the application of this test sufficed to indicate that the preparations of the neosalvarsan type submitted for test fell into two well-marked classes. On the one hand were those which resembled the German product more or less closely in appearance, in solubility, and in the rapidity with which their solutions underwent decomposition if left standing exposed to the air. On the other hand, there were others which had an advantage over the German product in their extremely free and rapid solubility, and which gave evidence of much greater stability in solution. Preparations of the former class had a border-line toxicity from the point of view of the test; many samples just passed it, and many others failed. A slight raising of the standard would have excluded nearly all. Those of the latter class—the freely and immediately soluble type—passed the routine test with an almost unbroken regularity; when, experimentally, sample batches of this type were tested on higher doses, it was found that many were tolerated in a dose of 0.5 mg., some even in a dose of 0.6 mg. per Gm.; *i. e.*, the toxicity was often only one-half of that at which they would still have passed the official control.

"No question of a control of therapeutic efficacy arose at this time. It would have been impossible, in any case, to carry it out with the staff available under war conditions. From the clinical side there was no hint of dissatisfaction; here again, in the hurry to get men through their treatment and return them to duty, no adequate control of results was possible. The practitioner appreciated the additional convenience afforded by rapid and perfect solubility, and the freedom from constitutional reactions, even when highly concentrated solutions were injected. The demand for the more soluble and less toxic type of product grew very rapidly, until manufacturers whose endeavor had been rather to copy the German product found themselves forced to modify their process, so as to produce a more soluble type. Therewith the toxicity of their products fell likewise to the lower level. When, under peace-time conditions, it became possible to follow more thoroughly the effects of treatment, it was reported from several sources to the Salvarsan Committee (appointed meanwhile by the Medical Research Council) that the curative action of the 914 products in use, which by that time had almost entirely conformed to the more soluble and stable type, was under serious suspicion of being inadequate. An investigation was therefore undertaken by those charged by the Medical Research Council with the duty of testing these

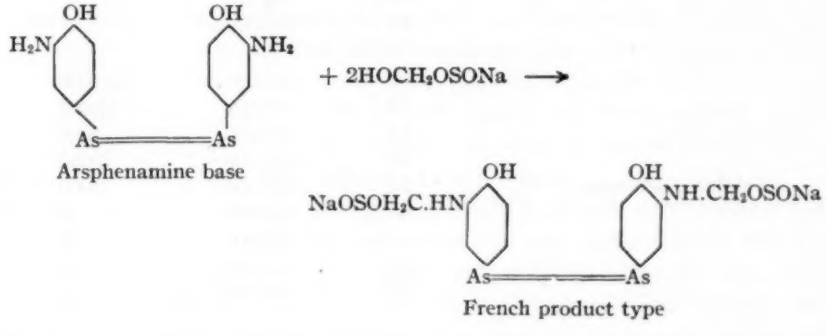
remedies. They were able to use, with slight modifications, the method, then recently recommended by American workers, of evaluating the therapeutic power on mice infected with a strain of trypanosomes. They found indications of a pronounced inferiority in therapeutic action of the 914 products of this country, as compared with the original German product, or with the former output of some British manufacturers. The facts were fully presented to the manufacturers concerned; the latter, with their experience, were then able to produce preparations which, while retaining some of the advantages of rapid solubility, showed as good therapeutic qualities as the German preparation, according to the experimental indication, and still satisfied the official control as regards toxicity. There are the British products of the 914 type which are now being supplied.

THE NEED FOR OFFICIAL CONTROL OF PRODUCTS OF THE 914 TYPE.

"The result of this investigation made obvious the desirability of imposing, if possible, an official control of products of the 914 type for therapeutic potency, in addition to the existing one for absence of abnormal toxicity. The existence of the latter alone in the case of a substance of ill-defined composition, such as 914, tempted the manufacturer to secure a smooth passage for his product, by slight changes in the process, which gave it regularly a lower toxicity than that which the test allowed. It was clearly desirable to make certain that, in so doing, he was not weakening its therapeutic action. Before steps in this direction could be considered, however, it was necessary to ascertain whether the difference in efficacy of different samples in removing trypanosomes from the peripheral circulation in mice corresponded with a clearly recognizable difference in their efficacy in removing the spironemes from syphilitic lesions in the human patient. The following sections of this paper describe the details of the investigation, in which the same representative samples of the different types of product were compared both experimentally and clinically. It will be seen that, so far as the clinical observations permit conclusions as to relative therapeutic efficacy in syphilis, the results of the clinical trial are in full accord with the experimental estimates."

These laboratory tests were put in routine use in the Medical Research Council's Department of Biological Standards at Hampstead.

Following this report a second article appeared by Macallum (1922) comparing the American neoarsphenamines with those of French origin which consists entirely of doubly substituted arsphenamines illustrated by the following formulas.



These same observations of chemical constitution have been made by Elvove (1922), and Raiziss (1921).

According to Government regulation the arsenic content must be between 30 and 32 per cent. for arsphenamine, and 18 to 20 per cent. for neoarsphenamine. It has been suggested from official sources that the minimum arsenic content of all products is to be increased. Likewise the application of a therapeutic test should be advocated by those who are desirous of giving the patient a truly active product.

This is substantiated by the work of Dale, Macallum, the U. S. Public Health Service and by the therapeutic tests of our own laboratories. As pointed out above

Drug.	Dose mg. per Kg.	No. of organisms per cu. mm. before treatment.	No. of organisms per cu. mm. 24 hrs. after treatment
	12	76,000	2000
	12	104,000	1500
	18	88,000	0
	18	82,000	0
Neoarsphenamine	27	68,000	0
	27	116,000	0
	40.5	74,000	0
	40.5	76,000	0
	60	72,000	0
	60	104,000	0
	12	82,000	8000
	18	102,000	250
	18	92,000	1500
	27	74,000	4000
Sulpharsphenamine	27	64,000	0
	40.5	60,000	0
	40.5	146,000	0
	60	106,000	0
	60	80,000	0
	12	108,000	256000
	18	96,000	6000
	18	106,000	10000
	27	118,000	4000
Sulpharsphenamine 154	27	60,000	0
	40.5	134,000	0
	40.5	92,000	0
	60	98,000	0
	60	106,000	0
	12	78,000	208,000
	18	98,000	14,000
	18	104,000	4000
	27	102,000	6000
Sulpharsphenamine N. U.	27	126,000	3000
	40.5	114,000	0
	40.5	88,000	0
	60	108,000	0
	60	94,000	0
	12	82,000	25,000
	18	80,000	14,000
	18	108,000	4000
	27	116,000	2000
Sulpharsphenamine L-121	27	126,000	0
	40.5	104,000	0
	40.5	86,000	0
	60	70,000	0
	60	120,000	0

these products are usually the di-substituted N-methylene sulphoxylate compounds or those oxidized to the next higher stage as illustrated by sulpharsphenamine.

Therapeutically sulpharsphenamine is less active than neoarsphenamine. Commercial products from the open market gave the accompanying trypanocidal tests when examined according to the methods of the U. S. Public Health Service.

From the figures on the preceding page it is observed that sulpharsphenamine is *two* and a *half* times less efficient than an average grade of neoarsphenamine but may be equally efficient therapeutically to a low-grade neoarsphenamine of the di-substituted class. (Lake, 1923.)

Neutral neosalvarsan may be used equally as well for intramuscular injections. This type of therapy has been utilized for more than three years by several leading syphilologists in the treatment of congenital lues in babies without the appearance of a single necrotic area on the buttock.

Silver arsphenamine has already taken its place among the antiluetic drugs that have proved their value in therapy. It finds its most valued application in cases where primary and secondary lesions are to be cleared up rapidly and also in that type of neurosyphilitics where a drug free from reactions is desired together with a high active arsenic penetrability into neural tissues.

It is *not* the *quantity* of arsenic which penetrates into the central nervous system but it is the *quality* (parasitotropic) and the *availability* at the site of the neural lesion which is to be considered the important factor.

Toxicologically it is rather difficult to produce any of the arsenical series that will not pass the present standards when men skilled in the handling of arsenic are engaged in the manufacturing process. The authors of this paper have been unable to find any arsphenamine or neoarsphenamine which is still in good condition that has ever been made either during the war or since the war that will not pass the present toxicity standards when normal, healthy, standardized rats are used. Myers and Corbitt elsewhere have shown that regulation of the inorganic salt content, principally the calcium, and amino acids are the chief factors in getting rats of this type. The composition of this diet is described in the *American Journal of Syphilis*, April 1923. Rats fed on ground wheat and corn, calcium carbonate, sodium chloride, milk powder, and cod-liver oil show a normal growth curve and a uniform resistance to the toxic effects of the drugs.

In other words all our rats are standardized by growth curves and it has been ascertained by these methods that salvarsan will pass according to the Government methods at 200 mg. per Kg., neosalsarvan at 380–420 mg. per Kg., sulpharsphenamine at 600–800 mg. per Kg., and silversalvarsan at 180–200 mg. per Kg.

From a toxicological point of view products in hermetically sealed ampules need not be kept in ice boxes. Products which have been carefully prepared do not deteriorate at least during a period of three years. The data on these points are to be found in other publications by us and are too comprehensive to include in this article. Preservation of the ampuls on cool, dark shelves will suffice.

The physical condition of the blood stream of the animals is made more uniform by regulating its composition so that colloidclasia is avoided, as well as giving a uniform resistance to the tissues of the animal. Animals with pathologic con-

ditions of the lungs and the liver occasionally may escape notice even under these circumstances. If at any time the death of an animal takes place immediately in the case of arsphenamine administration or in a few hours after the injection of the neoarsphenamine group, the animals in this group should be submitted to careful examination for liver or lung lesions which are magnified by means of arsenic intoxication.

As a result of these experiments, studies on man have been carried out by one of us (M.) and it has been shown that about 60 per cent. of the arsenic leaves the blood stream within the first five minutes. Unusual retention leads to such symptoms as jaundice, *dermatitis exfoliativa*, and gastro-intestinal disturbances. Briefly speaking investigation of antiluetic drugs has largely been directed toward the patient and his tolerance. All of the arsenic drugs are safe enough but unfortunately unusual variations in the efficacy of these products have often made it difficult to hold patients to a proper course of procedure in therapeutic application. Experimental data in practically every instance have been substantiated and closely paralleled in the clinical uses of these products.

To this may be added the words of a well-known old pharmacologist, Friedrich Wilhelm Vogt, who says:

"Arsenic has the common lot of all powerful drugs, that it is now praised, now blamed, and as its dynamic efficacy on the organism cannot easily be reached by any drug, and still less surpassed, one cannot be surprised that it is descried, especially by those physicians who fight shy of all power in a drug, while it is always appropriately esteemed by those who understand how to make use of such an important power. That arsenic was the most terrible poison under all circumstances was the general opinion of the former, and they expressed this without considering that no absolute poison could exist, and that it is precisely these poisons which are our most powerful weapons. Therefore, if any one wishes to realize the curative power of arsenic, then he must adhere solely to what observation of the healthy and diseased organism has taught us, and must entirely forget all the statements made by important men from a preconceived idea."

"As a result of this importance of arsenic, the necessity and endeavor arose, long years ago, to find arsenical derivatives which should be free from the toxic secondary effects and yet be able to obtain their entire pharmaco-dynamic action. The first important stage in this direction is indicated by the introduction of cacodylic acid and its salts, a further one by the discovery and application of atoxyl, the curative action of which in sleeping sickness has been tested first, by means of experiments on animals, and then in different directions has been confirmed on human beings, especially by Robert Koch. Unfortunately, it has also been shown that secondary effects of an undesirable kind (amauroses) are attached to this very effective preparation. Even if, in such a serious disease as sleeping sickness, the value of atoxyl preponderates, and therefore its employment appears to be indicated, this does not apply in the usual forms of syphilis (Uhlenhuth, Salmon), in which this drug should only be used with the greatest hesitation."

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NEW YORK, N. Y.

STUDIES IN THE GENUS MENTHA.*,†

XII. *Mentha piperita*, L. (Peppermint) as a Subject for Biochemical Research.

BY F. J. BACON, G. C. JENISON, AND R. E. KREMERS.‡

Students familiar with the range and variety of phenomena coming under the observation of pharmacists have often remarked upon the ignorance or indifference of other scientists to the possibilities for research upon these phenomena. To sketch the development of problems connected with a pharmacopœial substance into researches of very general interest is the object of this paper. The U. S. P. oil of peppermint, which was the original object of study, is not a natural oil, but one rectified to conform to certain standards. Since the peppermint industry is one of the largest in this country producing an essential oil, the problems connected with the growing plant as well as with the distillation of the oil are of obvious importance.

In order to become more familiar with this industry, the Wisconsin Pharmaceutical Experiment Station has been growing peppermint on a semi-commercial scale. The chemical studies at first concerned the recovery and identification of the compounds remaining in the aqueous distillate.[1,2] In 1921 acetone and methyl-I cyclohexanone-3 were found in these materials.[3] These substances result from the hydrolysis of pulegone, which in its turn was sought and found.[4] It was also observed that another mint, imported as a Japanese peppermint and growing in an adjacent field, was producing pulegone instead of menthol. These results at once suggested the existence of a common fundamental metabolism for oil production and offered a possibility for experimental investigation of the idea.

The further study of this proposition soon revealed that botanists consider

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* Scientific Section, Asheville meeting, 1923.

† Contribution from the Wisconsin Pharmaceutical Experiment Station, Madison.

‡ Holders, respectively, of the A. M. Todd Co. Fellowship, the Fritzsche Bros. Co. Fellowship, and a National Research Council Fellowship in Chemistry, at the University of Wisconsin.

[1] E. R. Miller, *Bull. U. W., Circ.* 9, Feb. 1920.

[2] R. E. Kremers, *Ibid., Circ.* II, Oct. 1920.

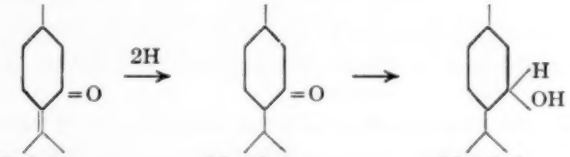
[3] R. E. Kremers, JOUR. A. PH. A., 10, 834, 1921.

[4] R. E. Kremers, *Jour. Biol. Chem.*, 52, 443, 1922.

M. piperita a hybrid,[1] whereas the menthol yielding plant of the Japanese is referred to *M. arvensis*, a true species. Thus the original simplicity of comparison was destroyed, but a vastly bigger problem could be visualized. If our common peppermint is a hybrid, and if the production of oil results from a definable process,[2] then the changes brought about in the oils by hybridization should lead to a clearer conception of hereditary processes. This is the problem toward which we have been working during the past year, more particularly to verify the premises.

The scope of the problem is enormous. In the first place, it has been necessary to establish with exactitude the definition of the "species" *M. piperita*. This was a research in itself, requiring the assembling and comparing of all original descriptions. Where original publications were not available, photostatic reprints were obtained. It is also necessary to attempt the experimental production of a "peppermint" by hybridization as a check upon the morphological deductions of the botanists.

On the chemical side, a prerequisite is a complete knowledge of the composition of the oil[3] so that both qualitative and quantitative variations may be followed from year to year. It has been found that methyl-cyclohexanone is not always present, and it is possible that the reported occurrence was due to the treatment to which the oil was subjected. But its precursor pulegone, and possibly piperitone, appear to be constantly present. This seems to be highly significant; for in the genus Mentha, pulegone and menthol are the only substances known to attain to 80 per cent. of the oil. This suggests that a menthenone is formed first, and that the menthone and menthol considered characteristic of peppermint are formed from it by reduction:



Pulegone. Menthone. Menthol.

Since piperitone gives isomenthones,[4] whereas pulegone appears to give ordinary menthone,[5] when reduced by palladium and hydrogen, it may be possible to trace these relationships very definitely.

This hypothesis must be accepted cautiously. Should it truly explain the origin of menthol, only a part of the whole fundamental biochemical process would have been elucidated. However, it is encouraging to find evidence which supports the premise of a biochemical process of oil production.

While these results are significant for biochemical theory, they are equally so for pharmaceutical practice. It is only a question of how the application is made. The finding of the menthenones in peppermint oil has influenced our biochemical theories and at the same time suggests a means of improving the quality

[1] On the authority of Briquet, cp. Tschirch.
[2] Ref. to R. E. K., *Jour. Biol. Chem.*, 50, 31, 1922.
[3] N. b. the classical work of Power and Kleber.
[4] Hughesdon, Smith, and Read, *C. A.*, 17, 1222, 1923.
[5] Jenison and Kremers, unpublished research.

of the oil. Should the latter be sufficiently great, it will undoubtedly be reflected in commerce and in the Pharmacopœia.

Another instance of the kind may be selected from our work. The aldehydes[1] present to a very slight extent in the natural oil are highly important in the suggested scheme of biochemical oil formation. On the other hand they are now refined away during rectification because of their objectionable properties. To study them more closely, material representing 12,000 pounds of natural oil[2] was worked up, yielding approximately 500 Gm. of isovaleric aldehyde. The mere handling of such a quantity of material suggests to the thoughtful experimenter ways of utilizing a by-product.

Although only a few of the more important developments have been sketched, we hope to have shown that a prosaically common pharmaceutical article like oil of peppermint may offer a little universe of fascinating ideas and problems to the inquisitive mind. We hope that the dispenser of this oil will share with us the sense of pleasure which these ideas bring and will regard his bottle of oil as a connecting link between himself and the living out of doors.

PROGRESS IN VITAMINE RESEARCH.*

BY CASIMIR FUNK AND HARRY E. DUBIN.

Vitamine research has advanced along three lines: first, the demonstration of the actual existence and the nature of specific vitamines; second, the study of the vitamine content of various foodstuffs, raw and cooked; third, investigation of the chemistry of the vitamines.

As regards the chemistry of the vitamines, little of real significance has been accomplished. A number of vitamine concentrates have been made by various investigators, while we ourselves have prepared concentrates from yeast and cod-liver oil which are approximately from five thousand to ten thousand times as active as the starting material. Nevertheless, despite this high degree of concentration, we are still far removed from the isolation of the various known vitamines and the determination of their chemical composition.

The study of the vitamine content of different foodstuffs is of practical importance in that particular dietaries may be chosen with confidence in the effects they will produce. In this direction, our knowledge of nutrition has been materially augmented.

However, it is the demonstration of the existence of specific vitamines which has spelled the greatest progress. Until very recently, only three vitamines were known:

A—The antirachitic vitamine, found in certain fats and oils and in the leafy parts of some vegetables.

B—The antiberiberi vitamine, occurring in a variety of grains, vegetables, fruits and in yeast.

C—The antiscorbutic vitamine, present in certain fruits and vegetables.

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[1] Ref. to R. E. K., *Jour. Biol. Chem.*, 50, 31, 1923.

[2] Generously furnished by the A. M. Todd Co., of Kalamazoo, Mich.

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The above classification was made in 1913 by Funk, who suggested at the same time the possibility of the existence of other vitamines. That this prophecy has been amply fulfilled will be presently made evident.

The vital importance of these chemically unknown substances, the "infinitely little," as they have been called, has been established over and over again by a host of investigators. Furthermore, not only must there be sufficient vitamines present in the diet, but it is also necessary that there be a suitable relationship between the other dietary constituents. There must be a suitable balance between the proteins, carbohydrates and fats of the diet as well.

The original classification of Funk held good for a long time, but little by little, evidence accumulated which tended to show that vitamine A was not identical with the antirachitic vitamine, and that vitamine B included something else besides the antiberiberi vitamine.

Funk and Dubin proved that what had been known as vitamine B really included another vitamine, named vitamine D, necessary for the growth of microorganisms. Soon after this, McCollum was able to demonstrate that vitamine A, originally known as the antirachitic vitamine, apparently consisted of two vitamines—one the antirachitic, the other the antiophthalmic. McCollum designated the latter vitamine A, while the former is generally called vitamine E.

We have, therefore, at the present time, definite knowledge of five vitamines. We need not concern ourselves here further with the vitamines first classified as the antiberiberi, antiscurvy and antirickets vitamines. As for the antiophthalmic vitamine and vitamine D, a few words will not be amiss.

Regarding vitamine D, we do not know what part it plays in animal metabolism. That it has some function seems likely, since it is found in association with vitamine B. It is, therefore, necessary that investigators desiring to study the action of vitamine B should make sure that vitamine D has been eliminated. This may be accomplished in two ways—one, by fractional adsorption with fuller's earth or charcoal; the other, by allowing microörganisms to grow in a medium containing a mixture of these two vitamines. In the former case, vitamine B is removed, while in the latter, vitamine B is left in solution, vitamine D being utilized by the growing cells. Under suitable conditions, the separation of vitamine B from vitamine D can be made complete.

Certain microörganisms cannot multiply in the absence of vitamine D. Under such circumstances, yeast presents a spore-like shrunken appearance. All statements to the contrary are due either to the contamination of the medium, as shown by Funk and Freedman, or to the presence of a marked quantity of vitamine D in the transplants.

The present importance of vitamine D lies in the fact that without this factor, life is dormant, and no synthesis of vitamine B occurs.

It is quite generally conceded that vitamines cannot be synthesized by the body, so that we must depend upon our food for an adequate supply of these factors. On the other hand, fat-soluble vitamines, antirachitic and antiophthalmic, can be stored in the body. Steenbock, Sell and Nelson showed that the liver varies in fat-soluble vitamine content with the ration fed. Thus, an individual may continue in health on a vitamine-poor diet immediately following one rich in vitamines, when a surplus is accumulated.

Another important advance in this field of research is the recognition of the divergence of the vitamine requirements of different species. Apparently not all of the known vitamines, possibly excepting vitamine B, are essential to all species. For instance, a diet which will suffice for pigeons will not do for rats, and one that is adequate for rats will not do for guinea pigs. Rats, dogs, pigeons and chicks do not need vitamine C, while for monkeys and man it is indispensable. Again, antirachitic vitamine seems necessary alike for dogs, rats and man, while the anti-ophthalmic vitamine, so essential to animals, seems to be little needed by man, in whom the characteristic ophthalmia due to the absence of this particular vitamine is rarely seen.

In this connection, it is obvious that there is much to be learned. Conceivably, research along this line may result in the discovery of new vitamines. We may mention here the work of Evans and Bishop and of Mattill, who have found that on a synthetic diet, regarded as perfect, growth can be normal, yet a substance seems lacking that is essential for reproduction. This substance has been shown to be present in lettuce and whole cereals, but it has not yet been identified.

Further progress was marked by the work of Hess and of McCollum and his collaborators. They point out that cod-liver oil appears to contain two vitamines—one having antirachitic action; the other, antiophthalmic action. The importance of this finding is not to be underestimated, even though unquestionable proof has not been submitted that we are really dealing with two distinct vitamines and not with a single vitamine, which possibly loses one of its properties by some internal molecular change. Thus, oxidation or reduction eliminates the antiophthalmic vitamine and leaves the antirachitic vitamine intact. Cod-liver oil is rich in both of these lipo-vitamines; they are also present to a lesser degree in egg-yolk, while butter is poor in antirachitic vitamine.

That the number of specific vitamines mentioned thus far by no means excludes the likelihood that new ones will be discovered is strongly suggested by a study of pellagra. It is known that certain types of diet produce pellagra while others do not. Goldberger and his associates have come to the conclusion that the most significant difference between these two types of diet is their content of protein of animal origin. They state that the proteins in pellagra-producing diets may lack certain important amino acids; at the same time, they admit that an unknown vitamine may play a rôle in the cause of pellagra. Hindhede, the noted Danish expert on nutrition, is a staunch supporter of the latter conclusion, with which we are also in agreement.

Despite the prodigious amount of data which has accumulated on the subject of nutrition, many of the problems involved are as yet far from solution. To prove this contention, it suffices merely to take two batches of rats, place one on the best possible artificial diet, plus vitamines, while the other is fed a natural diet. The second series reproduces normally and shows much better growth and resistance. All this shows that we are but at the beginning of our understanding of the nutritive needs of animals and that much more information must be gained before we can hope to master the subject of artificial nutrition.

Another field of investigation which holds out the promise of further development is the study of the influence of diet, particularly of vitamines, on the resistance of the body to poisons and infections. Reid Hunt, experimenting with mice and

rats, has shown that deficient diets produce a lowered resistance to poisons, like acetonitrile. While the mechanism of this lowered resistance remains unknown, it is nevertheless certain that the resistance to infection is actually diminished. These studies have a practical bearing, especially in tuberculosis, in which food has for some time past been recognized as one of the important factors.

Perhaps the most fascinating aspect of vitamine research lies in the possible relationship that exists between insulin and the blood-sugar reducing substance present in yeast and in various plants and vegetables. Working with pigeons, kept on a diet of polished rice only, Funk and Schonborn found that not only was there a lack of vitamine B, but also of a substance which metabolized sugar. In the above experiments, a semidiabetic condition developed with high blood sugar and the disappearance of glycogen. On the injection of a highly concentrated vitamine B, obtained from yeast, beriberi was cured and the blood-sugar returned to normal. Naturally, this is but a beginning and further work should be done in this direction.

As the research continues and the sum-total of our knowledge increases, other vitamines will undoubtedly be found to account for a number of disturbances in normal nutrition. It is in this field that we must look for the most fruitful developments.

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A NEW METHOD FOR OBTAINING WATER-SOLUBLE GLUCOSIDES FROM PLANTS IN A PURE STATE.

BY SUDHAMOY GHOSH.

The author was working on the problem of isolating the glucoside present in the bark of *Terminalia Arjuna*, the extract of which is used widely as a cardiac tonic by the Ayurvedic physicians of India. The aqueous extract was highly colored.

The use of litharge, which required a rather prolonged heating, partly decomposed the glucoside.

The ordinary method of using neutral or basic lead acetate gave quite clear solutions, but the later operations, *viz.*, complete removal of lead by H_2S (which took a long time) and the subsequent evaporation under reduced pressure, invariably led to a highly colored viscous residue. The presence of either Na- or NH_4-acetate in the residue, which decomposes to a certain extent, and its solubility in alcohol made it almost impossible to free the glucoside (which was highly soluble in water) from the above and allow it to crystallize. Further, the presence of acetates, which are cardiac depressants, somewhat vitiates the pharmacological experiments.

The method which was devised by the author was as follows: A finely powdered mixture of lead chloride (about 10% of the weight of the dry bark) and litharge (about one-third of the weight of $PbCl_2$) was put into the aqueous extract of the bark and steam passed for 5 to 10 minutes, while the solution was vigorously stirred

with a rod. The solution was next immediately neutralized with a 10% solution of sodium carbonate, and, on cooling, filtered with the aid of a water-pump.

Most of the lead is precipitated as carbonate and the little that remains in solution is easily removed by H_2S. The presence of PbO keeps down the acidity of $PbCl_2$ and thus lessens the chances of hydrolysis of the glucoside. The solution on evaporation gives a far purer product than with lead acetate, while the presence of the harmless NaCl does not interfere with the pharmacological action of the glucoside. The amount of NaCl can be easily estimated by standard $AgNO_3$ and the approximate amount of glucoside settled for clinical use on a large scale for which extra purification is not essential. The NaCl can also be easily eliminated by repeated recrystallizations from alcohol. The method will thus be very useful for pharmacological work in the case of highly water-soluble glucosides and, with the necessary modifications as to the quantities of $PbCl_2$ and PbO, it promises to be of great industrial importance.

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ISOPROPANOL A NEW SOLVENT AND PRESERVATIVE FOR THE PHARMACIST.

BY HENRY C. FULLER.

Considerable interest had developed of late over isopropanol, owing to its sudden appearance in the commercial field, and to the possibilities for its use that have been featured in the scientific press. This had naturally brought about a great deal of discussion as to what the properties of isopropanol really are, and to what extent it may reasonably be considered a valuable commodity in the arts and industries. It is the purpose of this paper to set forth a few facts concerning its possibilities in the pharmaceutical field, the observations being based on intensive researches of some two years' standing.

Pure isopropanol is a colorless liquid with a mild but not unpleasant odor, boiling between 81 and 83° C., and miscible in all proportions with water. As it ordinarily occurs in commerce, it contains about 10 per cent. of water. It is destructive to microörganisms, but has no corrosive action on the skin. It dissolves volatile oils, resins and many different organic and inorganic substances. On account of its solvent and preservative actions, and because it mixes in all proportions with water, it early gave evidence of being a product of great importance to the pharmaceutical trade.

When it was suggested that it might prove to be a valuable commodity for the pharmacist and medicine maker, and that, because of its unrestricted use, it might solve many of the problems that now encumber the use of alcohol and other solvents, it was deemed expedient to see just to what extent it was a good dissolving and holding agent for drug extracts, tinctures, liniments, etc., to what extent it was a preservative and what might result from the ingestion or application of these preparations in so far as the isopropanol was concerned.

In the first place, a number of standard preparations of the Pharmacopœia and National Formulary were made with isopropanol as the solvent instead of

ethyl alcohol. These represented a wide range of types and products that are constantly in use in pharmaceutical and medicinal practice. The fluidextracts included digitalis, belladonna, cinchona, cascara and gentian. The preparation of the same therefore entailed a test of three of the standard type processes for making fluidextracts, as well as a chance to observe the results on a physiologically assayed drug, two alkaloidal drugs, one that depends for its action on a readily decomposed anthraquinone derivative, and another on a bitter glucoside. In all cases the percolation proceeded with the same degree of facility as if the solvent usually prescribed had been employed, and the resultant finished products were of excellent appearance with the full content of active principles. Shelf tests lasting over six months indicate that no changes are taking place.

In preparing tinctures, those selected included jalap, ginger, aloes, opium and iodine. Here a departure was made from the strictly vegetable galenicals noted among the fluidextracts, in that isopropanol was used to dissolve the inorganic substances, iodine and potassium iodide. The tinctures of jalap and ginger contained the full complement of resins that characterize them, and in addition the tincture of ginger was delightfully aromatic and pungent. Tincture of aloes, while not a widely used preparation, was selected in order to test the solvent action on aloin and the results were all that could be desired both as to the bitter property and physiological action. No special comments are necessary in the case of the tincture of opium or iodine; both are of the requisite assay and are of excellent appearance after a six months' shelf test.

Passing to the spirits—there were compounded with isopropanol the well-known preparations, spirit of camphor, aromatic spirit of ammonia, spirit of nitrous ether, and the compound spirits of myrcia, vanillin, orange, cardamom, and juniper. The camphor dissolved perfectly and stayed in solution, and the aromatic spirit of ammonia was comparable in every respect with that made with ethyl alcohol. Particular attention should be called to the spirits made for flavoring purposes which were of excellent appearance and taste, and indistinguishable from those made with the customary solvent.

Among other miscellaneous pharmaceuticals made up with isopropanol were—soap liniment, liquor antisepticus, both acid and alkaline, and aromatic elixir.

Sufficient data have been obtained to indicate that in practically every instance involving a U. S. P. or N. F. product, isopropanol can be substituted for ethyl alcohol without affecting in the least the physical appearance or the therapeutic efficiency.

In several instances, specialties representing formulas of widely diverse character have been compounded with isopropanol as the solvent, and placed alongside those made up in the same way with the solvents ordinarily employed. In every instance, isopropanol has proved to be a satisfactory substitute. It has worked out satisfactorily in rubbing and massaging compounds extensively employed in the hospital, and can be used to advantage in the various types of mouth washes, antiseptic sprays and dentifrices of the dental profession.

The question may naturally arise as to what evidence we possess that isopropanol will act as a preservative against the action of yeasts, molds and bacteria. To answer this query, a series of tests was instituted, which demonstrated that isopropanol would inhibit the development of mold and render dormant the spores to the same degree at least that is done by ethyl alcohol. As to its comparative

action against yeasts and bacteria, the following chart shows that it has an inhibitory value of greater intensity than ethyl alcohol.

In the test against bacteria, increasing quantities were mixed with standard extract broth and inoculated with *Bacillus typhosus*. After incubation subcultures were made whereby the disinfectant effect was determined. In the fermentation tests only the inhibitory values were recorded.

TABLE OF RESULTS SHOWING THE COMPARATIVE ACTION OF ISOPROPANOL AND ETHYL ALCOHOL AGAINST BACTERIA AND YEASTS.

Bacteria.

Technic: Preparations in the following quantities were mixed with 10 cc of standard extract broth, inoculated with one standard (4 mm.) loop of a vigorous 24-hr. broth culture of *Bacillus typhosus* "Rawlings;" cultured at 37.5° C. for 48 hrs. and observed for inhibition; subcultured on agar to determine disinfectant strength.

Quantity of preparation used, cc.	Isopropanol.		Ethyl alcohol.	
	Inhb. cult.	Sub. cult.	Inhb. cult.	Sub. cult.
0.1	+	+	+	+
0.2	+	+	+	+
0.3	+	+	+	+
0.4	+−	+	+	+
0.5	+−	+	+−	+
0.6	−	−	+−	+
0.7	−	−	−	+
0.8	−	−	−	−
0.9	−	−	−	−
1.0	−	−	−	−
1.1	−	−	−	−
1.2	−	−	−	−
1.3	−	−	−	−
1.4	−	−	−	−
1.5	−	−	−	−

Yeasts.

Technic: Preparations in the following percentages of the substances mixed with standard fermentation liquor were planted with bakers' yeast and incubated 24 hours at 36° C.

Percentage mixture.	Isopropanol.	Ethyl alcohol.
7	+	+
8	+	+
9	+	+
10	+	+
11	+	+
12	+	+
13	+	+
14	−	+
15	−	+
16	−	+
17	−	−
18	−	−
19	−	−
20	−	−
21	−	−
22	−	−
23	−	−
24	−	−
25	−	−

Key: + indicates positive growth.
− indicates no growth.

The physiological action of isopropanol has been the subject of considerable investigation, and during the past three years many references have occurred in the literature. These investigations have included studies of the action of the vapor with special reference to its effect on the vision; observations of its local effects when applied to the skin, scalp and open wounds; studies of its action on the internal economy when administered by mouth, and tests on its action when injected intravenously and on isolated animal organs.

The experiments on animals demonstrated that isopropanol had no deleterious action on the vision either when the subject was exposed to the vapors or when taken internally. The conclusions of other workers were checked by the writer on monkeys and human subjects.

As the result of a large number of tests on animals and human subjects, it was apparent that isopropanol was without harmful action when administered

locally. Isopropanol could be safely used for irrigating wounds, rubbing into the skin and scalp, and for local applications generally. It was applied to the hands in the form of lotion, to the face after shaving, in liniments, liquid soap and in antiseptic solutions for the throat. It was used for sponge baths, and in hospital practice for alcohol rubs. As a remedial agent alone dilute solutions have been found beneficial in treating facial acne, bacterial eczema and various diseases of the scalp.

Its employment as a solvent in remedies for internal administration may be seriously considered. Animal experiments have shown that in the case of rabbits and dogs when small doses were properly administered, the isopropanol is largely oxidized in the body, and that when given over a long period there is no inhibition of growth. The conclusions of other workers, whose observations coincide in general with what has just been said, have been confirmed by the present writer in an extensive series of experiments lasting over a year in which isopropanol was tested under a variety of conditions on the lower animals, monkeys and human subjects. In the quantities that might enter the system through such mediums as medicines, isopropanol would have no other physiological action on the internal economy than that which might be induced by a similar quantity of acetone, to which substance isopropanol is oxidized by metabolic changes. Acetone has been a commercial product in general use under unrestricted conditions for a long period and no reports of its being a toxic agent have been recorded. It can be administered in comparatively large quantities to animals without permanent deleterious effect and even large excessive doses, out of all reason to the size and weight of the subject, have, under the writer's observation, failed to cause death.

The tests on isolated organs and through intravenous administration are of interest from a purely scientific standpoint but need no special comment as they are without significance in the present presentation of the subject. Detailed summaries of the researches noted and the complete articles themselves have appeared in the literature within the past year or so, and instead of filling space with individual quotations, the general conclusions of them all have been noted in the above paragraphs and a bibliography occurs below.

It is evident that the pharmaceutical profession has access to a solvent that may be destined to solve some of its most exasperating problems. Isopropanol apparently promises everything that is offered by ethyl alcohol as a dissolving and holding agent and it is a better antiseptic and disinfectant. It enjoys a free and unrestricted sale and its use is not affected by the mass of regulations and restrictions that now hamper the handling of ethyl alcohol.

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GOVERNMENT STANDARDS FOR SPICES.

COMPILED BY EARL B. PUTT AND HARVEY A. SEIL.*

CONTENTS.

Standards of the United States Pharmacopœia, National Formulary and the United States Department of Agriculture for the following Spices and related products:

Allspice, N. F.
Anise, U. S. P.
Capsicum, U. S. P.
Caraway Seed, U. S. P.
Cardamom Seed, U. S. P.
Celery Seed, N. F.
Chillies (Bombay, African, Indian, Talay, Cherries).
Cinnamon (Cassia, Ground Cassia, Ceylon and Saigon, U. S. P.)
Cloves, U. S. P.
Coriander Seed, U. S. P.
Cumin Seed.
Dill Seed.
Fennel Seed, U. S. P.
Ginger (Jamaica, African, Calicut, Cochin, Japanese, U. S. P.)
Mace, N. F.
Marjoram.
Black Mustard, U. S. P.
Mustard Flour.
French Mustard.
German Mustard.
Ground Mustard.
Mustard Paste.
Prepared Mustard.
White Mustard, U. S. P.
Nutmeg, U. S. P.
Paprika.
Hungarian Paprika (Rosenpaprika, Rozsapaprika Rose Paprika).
Koenigspaprika, King's Paprika.
Spanish Paprika.
Black Pepper, U. S. P.
Cayenne Pepper, U. S. P.
Red Pepper.
White Pepper.
Pimenton (Pimiento, Spanish Paprika).
Poppy Seed.
Saffron, N. F.
Sage.
Star Anise.
Thyme, N. F.

ALLSPICE, Pimenta, N. F.†—N. F. Requirements: Not more than 5% stems or other foreign matter, crude fiber not over 25%, ash not more than 6%.

Department of Agriculture requirements: Not less than 8% of quercitannic acid, not more than 25% crude fiber, not over 6% total ash, not more than 0.4% of ash insoluble in hydrochloric acid. (*Circular* 136.)

ANISE, Aniseed, U. S. P.†—U. S. P. Requirements: Not more than 3% of foreign seeds or other vegetable matter. Not more than 9% ash.

Department of Agriculture requirements: Not more than 9% ash, not more than 1.5% ash insoluble in hydrochloric acid, not more than 3% foreign matter. (*Circular* 136.)

CAPSICUMS, U. S. P., Cayenne Peppers, African Chillies.—U. S. P. requirements: Not more than 2% of stems, calyxes or other foreign matter, not less than 15% of non-volatile ether extract, not more than 7% ash, not more than 1% ash insoluble in hydrochloric acid.

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* Formerly Experts, U. S. Dept. of Agriculture.

† NOTE.—The initials "N. F." following a name indicate that the article is official in the National Formulary, one of the official standards of the Food & Drugs Act.

Articles marked "U. S. P." are official drugs of the United States Pharmacopœia, Ninth Revision, which is also a legal standard under the Food and Drugs Act.

Where no qualifying mark thus identifies a spice in the above list, it is not official either in the National Formulary or the United States Pharmacopœia and the standard given is only that established by the Department of Agriculture. It should be noted, however, that standards established by the Department of Agriculture, when authorized as they usually are by the Secretary of Agriculture, have the same legal basis as the more formal requirements of the United States Pharmacopœia and National Formulary.

Department of Agriculture requirements: Not less than 15% of non-volatile ether extract, not more than 1.5% starch, not more than 28% crude fiber, not more than 8% ash, not more than 1.25% ash insoluble in hydrochloric acid. (*Circular* 136.) Not more than 2% stems, not more than 10% of moldy or wormy pods.

CARAWAY SEED, U. S. P.—U. S. P. requirements: Not more than 3% foreign matter, not more than 8% total ash.

Department of Agriculture requirements: Not more than 8% total ash, not more than 1.5% of ash insoluble in hydrochloric acid. (*Circular* 136.)

CARDAMOM SEED, U. S. P.—U. S. P. requirement: not more than 8% ash.

Department of Agriculture requirements: Not over 8% total ash, not more than 3% ash insoluble in hydrochloric acid. (*Circular* 136.)

CELERY SEED, N. F.—N. F. requirements: Not more than 10% foreign matter, not more than 8% ash.

Department of Agriculture requirements: Not more than 10% total ash nor more than 2% ash insoluble in hydrochloric acid. (*Circular* 136.)

CHILLIES: The large varieties, *i. e.*, Bombay, Indian, Talay, Cherries.

Department of Agriculture requirements: Not more than 5% stems, nor more than 10% by weight of moldy or wormy pods.

CHILLIES, African (see CAPSICUMS).

CINNAMON: Cassia, classed by Department of Agriculture *Circular* 136, as same as Saigon Cinnamon.

CINNAMON, Ground; Ground Cassia: The powder made from cinnamon and contains not more than 5% of total ash, nor more than 2% ash insoluble in hydrochloric acid.

CINNAMON CEYLON, U. S. P.—U. S. P. requirements: Not more than 3% of the outer bark or other foreign matter, not more than 6% ash, not more than 2% of ash insoluble in hydrochloric acid, not less than 0.5% of volatile extractive, soluble in ether.

CINNAMON SAIGON, U. S. P.—U. S. P. requirements: Not less than 2% of volatile extractive soluble in ether, not more than 6% ash, nor more than 2% of ash insoluble in hydrochloric acid.

CLOVES, U. S. P.—U. S. P. requirements: Not more than 5% of peduncles, stems or other foreign matter, not less than 10% of volatile ether extract, not more than 8% ash, nor more than 0.5% of ash insoluble in hydrochloric acid.

Department of Agriculture requirements: Not more than 5% clove stems, not less than 15% volatile ether extract, not less than 12% of quercitannic acid, not more than 10% crude fiber, not more than 7% total ash, not more than 0.5% of ash insoluble in hydrochloric acid. (*Circular* 136.)

CORIANDER SEED, U. S. P.—U. S. P. requirements: Not more than 5% of other fruits, seeds or foreign matter, not less than 0.5% of ether-soluble volatile extractive, not more than 7% ash.

Department of Agricultural requirements: Not more than 7% total ash, not more than 1.5% of ash insoluble in hydrochloric acid, not less than 95% sound seeds. (Bored or wormy seeds are considered as foreign matter.) (*Circular* 136.)

CUMIN SEED.—Department of Agriculture requirements: Dried fruit of *Cuminum cyminum*. Contains not more than 8.5% total ash, not over 1.5% of ash insoluble in hydrochloric acid, nor more than 4% foreign matter. (*Circular* 136, *S. R. A.* 19.)

DILL SEED.—Department of Agriculture requirements: Dried fruit of *Anethum graveolens* containing not more than 10% total ash nor more than 3% of ash insoluble in hydrochloric acid.

FENNEL SEED, U. S. P.—U. S. P. requirements: Not more than 4% foreign matter, nor more than 9% ash.

Department of Agriculture requirements: Not more than 9% total ash, not more than 2% of ash insoluble in hydrochloric acid, not more than 4% foreign matter. (*Circular* 136.)

GINGER, U. S. P.—Jamaica, African, Calicut, Cochin and Japanese gingers are all included in the U. S. P. definitions of GINGER.

U. S. P. requirements: Not less than 8% of cold water extract, not less than 2% of ether-soluble, non-volatile extract, not less than 4% of alcohol-soluble extractive and not more than 8% of ash.

Department of Agriculture requirements: Contains not less than 42% starch, not more than 8% crude fiber, not more than 1% lime, not less than 12% of cold water extract, not more than 7% of total ash, not more than 2% of ash insoluble in hydrochloric acid, not less than 2% of ash soluble in cold water. Jamaica Ginger is ginger grown in Jamaica. It contains not less than 15% of cold water extract, and conforms in other respects to the standards for Ginger. (*Circular* 136.)

MACE, N. F.—N. F. requirements: Free from adulteration with Bombay Mace. Contains not less than 8% of volatile ether extract, not less than 20% and not more than 30% of non-volatile ether extract, not more than 3% of ash which is almost completely soluble in hydrochloric acid.

Department of Agriculture requirements: Not less than 20% nor more than 30% of non-volatile ether extract, not more than 10% crude fiber, not more than 3% total ash, not more than 0.5% ash insoluble in hydrochloric acid. (*Circular* 136.)

MARJORAM.—Department of Agriculture requirements: Ash not more than 16%, not more than 4.5% of ash insoluble in hydrochloric acid, stems including petioles and foreign material not more than 10%, ethereal oil not less than 0.6%. (*S. R. A.* 14.)

MUSTARD, BLACK, U. S. P.—U. S. P. requirements: The ripe seeds of *Brassica nigra* containing not more than 5% of foreign matter. Yields allyl isothiocyanate on distillation with steam. Ash not more than 9%.

Department of Agriculture requirements: Yields 0.6% of volatile mustard oil (as in *S. R. A.* 20). Total ash not over 5%, not more than 1.5% of ash insoluble in hydrochloric acid. (*Circular* 136.)

MUSTARD CAKE: "is ground mustard seed, mustard meal, from which a portion of the fixed oil has been removed." (*F. I. D.* 192.)

MUSTARD FLOUR, GROUND MUSTARD, "MUSTARD:" "is the powder made from mustard seed with the hulls largely removed and with or without the removal of a portion of the fixed oil. It contains not more than 1.5% of starch, nor more than 6% total ash." (*F. I. D.* 192.)

MUSTARD FRENCH (see MUSTARD, PREPARED).

MUSTARD, GERMAN (see MUSTARD, PREPARED).

MUSTARD, GROUND, MUSTARD MEAL: "is the unbolted, ground mustard seed and conforms to the standards for mustard seed." (*F. I. D.* 192.)

MUSTARD PASTE (see MUSTARD PREPARED).

MUSTARD PREPARED: "is a paste composed of a mixture of ground mustard seed and, or mustard flour and, or mustard cake, with salt, a vinegar, and with or without sugar (sucrose), spices, or other condiments. In the fat-, salt-, and sugar-free solids it contains not more than 24% of carbohydrates, not more than 12% of crude fiber, nor less than 5.6% of nitrogen, the carbohydrates being calculated as starch." (*F. I. D.* 192.)

MUSTARD, WHITE, U. S. P.—U. S. P. requirements: The ripe seeds of *Sinapis alba*, containing not more than 5% foreign matter. Ash not over 9%. Does not yield allyl isothiocyanate on distillation with steam.

Department of Agriculture requirements: Contains no appreciable amount of volatile oil. Not more than 5% total ash, nor more than 1.5% of ash insoluble in hydrochloric acid. (*Circular* 136.)

NUTMEGS, U. S. P.—U. S. P. requirements: Reject broken or wormy kernels. Ash not more than 5%.

Department of Agriculture requirements: Not less than 25% of non-volatile ether extract, not more than 10% crude fiber, not more than 5% ash, nor more than 0.5% ash insoluble in hydrochloric acid. Not more than 20% of the nutmegs should show distinct evidence of mold.

PAPRIKA.—Department of Agriculture requirements: Dried ripe fruit of *Capsicum annuum*. It contains not more than 8.5% total ash, nor more than 1% of ash insoluble in hydrochloric acid. The iodine number of its extracted oil is not less than 125 nor more than 136. (*Circular* 136.)

PAPRIKA, HUNGARIAN: Department of Agriculture requirements: "Is Paprika having the pungency and flavor characteristic of that grown in Hungary."

"(*a*) *Rosenpaprika, Rozsapaprika, rose Paprika* is Hungarian Paprika prepared by grinding specially selected pods of paprika from which the placentae, stalks and stems have been removed.

It contains no more seeds than the normal pods, not more than 18% of non-volatile ether extract, not more than 23% of crude fiber, not more than 6% of total ash, nor more than 0.4% of ash insoluble in hydrochloric acid."

"(*b*) *Koenigspaprika, King's Paprika* is Hungarian Paprika prepared by grinding whole pods of paprika without selection, and includes the seeds and stems naturally occurring with the pods. It contains not more than 18% of non-volatile ether extract, not more than 23% of crude fiber, not more than 6.5% total ash, nor more than 0.5% of ash insoluble in hydrochloric acid." (*Circular* 136.)

PAPRIKA SPANISH (see PIMENTON).

PEPPER, BLACK, U. S. P.—U. S. P. requirements: Not more than 2% stems or other foreign matter, not less than 6% of non-volatile ether extract, not less than 25% of starch, not over 7% of ash, not more than 2% of ash insoluble in hydrochloric acid.

Department of Agriculture requirements: Not less than 6.75% of non-volatile ether extract, not less than 30% starch, not over 7% total ash, nor more than 1.5% ash insoluble in hyhydrochloric acid. (*Circular* 136.)

PEPPER, CAYENNE (see CAPSICUMS, U. S. P.).

PEPPER, RED.—Department of Agriculture requirements: The red, dried ripe fruit of any species of Capsicum. It contains not more than 8% of total ash, not more than 1% ash insoluble in hydrochloric acid, stems, not more than 5%, and not over 10% of moldy or wormy pods. (*Circular* 136 and unofficial standard.)

PEPPER, WHITE.—Department of Agriculture requirements: Not less than 7% nonvolatile ether extract, not less than 52% starch, not over 5% crude fiber, not more than 3.5% total ash, nor over 0.3% ash insoluble in hydrochloric acid. (*Circular* 136.)

PIMENTA (see ALLSPICE).

PIMENTON, Pimiento, Spanish Paprika.—Department of Agriculture requirements: is paprika having the characteristics of that grown in Spain. It contains not more than 18% of non-volatile ether extract, not more than 8.5% of total ash nor more than 1% of ash insoluble in hydrochloric acid. (*Circular* 136.) Not more than 21% crude fiber.

POPPY SEED.—Department of Agriculture requirements: The seed of *Papaver somniferum*. Contains not more than 3% of harmless foreign material, not more than 8% total ash and not more than 1.5% of ash insoluble in hydrochloric acid. (*S. R. A.* 19.)

SAFFRON, N. F.—N. F. requirements: Not more than 10% of yellow styles or other foreign matter, not more than 14% volatile matter at 100° C., not more than 7.5% ash and the ash is not fusible.

Department of Agriculture requirements: Not more than 10% yellow styles, and other foreign matter, not more than 14% of volatile matter when dried at 100° C., not more than 6% ash, not more than 1% ash insoluble in hydrochloric acid. (*Circular* 136.)

SAGE.—Department of Agriculture requirements: Leaves of *Salvia officinalis*. Not less than 1% volatile ether extract, not more than 25% crude fiber, not more than 10% total ash, not more than 1% ash insoluble in hydrochloric acid. (*Circular* 136.) Stems (excluding petioles) and other harmless foreign material not more than 12%. (*Circular* 19.)

STAR ANISE: Department of Agriculture requirements: The dried fruit of *Illicium verum*. It contains not more than 5% total ash. (*Circular* 136.)

THYME, N. F.—N. F. requirements: Tops of *Thymus vulgaris* collected when in flower, not more than 14% ash.

Department of Agriculture requirements: Total ash not more than 14%, not more than 4% ash insoluble in hydrochloric acid. Stems, including petioles, and foreign material not more than 15%. Ethereal oil not less than 1%. (*Circular* 136 and *S. R. A.* 14.)

CONTRIBUTION FROM THE LABORATORIES OF
SEIL, PUTT & RUSBY, INC.,
NEW YORK CITY.

THE DEPARTMENT OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

(EDITOR'S NOTE.—Practically all scientific professions are devoting more attention to research to-day than they have given to it at any previous time. The importance of research was well emphasized during the war and the result is this greater activity above mentioned. Pharmacy should do its part in this work. The article by Dr. E. V. Lynn of the College of Pharmacy of the University of Washington which appears in this issue of the Journal is timely and sets forth some of the salient facts regarding pharmaceutical research.

C. B. JORDAN, *Chairman and Conference Editor.*)

"What is the matter with pharmacy?" This question has been asked at various times during the last few years and the resulting discussion has been rather voluminous. At least one eminent writer has come to the conclusion that there is nothing the matter. We can all safely agree with this if we care to assume a blind feeling that present conditions are satisfactory, for it is obvious that there can be nothing wrong with us, in our own opinion, if we are perfectly content with our present position. But the writer is firmly convinced that the majority of our profession is not so self-satisfied.

In times not so recent the pharmacist was one of the reverenced in his community, on a par with the minister, teacher, and physician, treated as an equal by all of these and by the layman in general. Since then the educational standards of the people as a whole have been constantly raised until to-day a college training of four years is not an unusual experience. The medical and pedagogical standards have been increased consistently and adequately during this general elevation of education so that the teaching and medical professions still retain the same relative position in commanding the respect of society. Pharmacy has lagged woefully in this matter and to-day might well be compared in the public opinion with the butcher and grocer. Do not most of us feel that there will always be something wrong until our profession regains its lost position as an equal with the physician in public regard? Why then have we lost this equality? The answer to this is apparently obvious in a lack of educational standards and a consequent absence of pharmaceutical research.

There is no doubt that we are confronted with an economic and even vital necessity for raising the standards of schools of pharmacy. Slowly but surely the function of the Conference in promoting this cause has been manifesting itself in a general move among the members toward a higher set of requirements in all respects. It is true that many of the colleges are very slow in responding to this universal movement and that some few have even delayed a recognition of the minimum set by the Conference, but the majority of our pharmaceutical institutions are behind the movement and we cannot but be pleased with the general tendency toward higher educational requirements. We can now easily foresee the time when four years in college will be required of all practicing pharmacists. But can we afford to stop there? Will we not fall far short of our goal if we do not foster a spirit of research in those who graduate with a batchelor's degree? We cannot expect satisfactory results in research until we have placed the schools on higher standards, since adequate training is a prerequisite to original work, but neither

can we attain the objects which should be ours until we can show such results to our critics.

The large drug manufacturers have not been slow in realizing that research means advancement in more ways than financially. Perhaps they have been inspired by entirely selfish motives but the fact remains that, although some of them are mistakenly reticent as to the publication of results, they are undoubtedly doing their share. Nevertheless, it is certainly true and evident to most of us that the original work, which would replace the profession of pharmacy on its former plane of equality with that of medicine, must be multiplied many times beyond what the manufacturer can undertake. Granting that there is such a need for a multiplication of the volume of results, where else can we look for a source of these than to the schools of pharmacy? Several of them have already instituted a rapidly growing graduate department and we must congratulate them and the profession of pharmacy on being in a position to promote such a movement. The propagation of this, however, needs stimulation and encouragement from the profession in its entirety. Individually and collectively, we can accomplish a great deal towards the attainment of our goal by nursing in our schools this research spirit which is so essential.—E. V. LYNN.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Board of Directors."—Part of Chapter VI, Article VI of the By-Laws.

Article IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

CALL FOR CONFERENCE ON U. S. P. AND N. F. REVISION WORK.

The very extensive data obtained by E. L. Newcomb—regarding the wide range in degree of fineness of commercial powdered drugs and the apparent impossibility of preparing from many drugs a powder of fairly uniform degree of fineness—which he recently presented to the U. S. P. and N. F. Revision Committees, has opened up a wide range of inquiries which not alone concern the pharmacognosist and drug miller, but also every department of pharmacy concerned with the extraction of drugs.

This and a number of other unsolved problems before the Revision Committees show the great need of frequent conferences for their discussion and solution.

The Chicago Branch of the American Pharmaceutical Association is extending an invitation to hold such a conference at Chicago, January 11–12, 1924.

E. L. Newcomb has agreed to come from Minneapolis, and we have the promise of Messrs. A. H. Clark, Bernard Fantus, George D. Beal, C. M. Snow, Wm. B. Day, E. H. Wirth, Wm. Gray, Hugh McGuigan, S. C. Henry, and others to be present. We are at this time sending invitations to Messrs. Henry Kraemer, C. A. Dye, John M. Francis, A. John Schwarz, E. A. Ruddiman, W. L. Scoville and L. A. Seltzer, all of whom are relatively near to Chicago, and to Messrs. George M. Beringer, E. Fullerton Cook, Charles H. LaWall and Hermann Engelhardt, from the East.

Every member of each of these Revision Committees, and others who may be interested, are cordially invited to be present at this conference. As the conference has not been officially called by either body, no provision is made to meet the expenses of those attending, but this expense will be very small, except the transportation.

E. N. GATHERCOAL, *Secretary*,
Chicago Branch, A. Ph. A.

BALTIMORE.

The first meeting of the Baltimore Branch, A. Ph. A. for 1922–1923 was held at the Hotel Emerson on Thursday evening, October 25th, Dr. Hermann Engelhardt presiding.

President Engelhardt had previously sent out a letter explaining the status of the Branches in the House of Delegates as set out in the reorganization of the A. Ph. A., explaining that at least six meetings with nine members in good standing in attendance must be held to enable the Branches to have a representative in the House of Delegates.

The attendance at this meeting was very good, and if each meeting is as well attended, we will have no difficulty in having a representative in the House of Delegates at the Buffalo Convention next fall.

The meeting was also very interesting, the greater part of it being devoted to the reports of the members who were fortunate enough to attend the Asheville meeting of the A. Ph. A., F. F. Berg reporting on the Scientific Section; E. F. Kelly on the House of Delegates; John C. Krantz, Jr., on the Commercial and Dispensing Sections; Robert L. Swain on the National Association of the Boards of Pharmacy; and B. Olive Cole on the Conference of Pharmaceutical Faculties and the Section on Historical Pharmacy.

The next meeting will be held at the Hotel Emerson on Tuesday evening, November 20th. A memorial meeting honoring the late Dr. John F. Hancock was held jointly with the Maryland Pharmaceutical Association, Baltimore Retail Druggists' Association, Drug Exchange Bureau, M & M Association, Wedgewood Club and various charitable and civic organizations on December 6th.

B. OLIVE COLE, *Secretary-Treasurer*.

CHICAGO.

The 137th meeting of the Chicago Branch of the American Pharmaceutical Association was held at the College of Pharmacy Building, Friday evening, November 9, 1923, with President Warren in the chair. The members and friends present at the meeting crowded the Chemistry Lecture room.

The subject of the evening was insulin. Dr. David Klein, head of the Research and Scientific Departments of the Wilson Laboratories, one of the foremost men of America in the investigation of this drug, presented an able paper on the discovery, history and preparation of insulin. His address was so ably presented and in such suitable wording that every one in the audience could appreciate this remarkable discovery and could visualize the many avenues of investigation that it has already opened up and some into which it may lead. He pointed out the remarkable fact that while it was first thought that insulin was a peculiar secretion of cells in the Island of Langerhans in the pancreas, it has since been determined that it is present in many locations, not only in various glands and muscles of warm-blooded animals, but also in plants, notably germinating cereals, tubers and green leaves, and that it possibly is present wherever the assimilation of carbohydrates is a function of the cell. The speaker stated that he was not a plant pathologist and never heard of diabetes of wheat, but such a condition was a possibility and we might reach the point where treatment of wheat for this trouble would be practiced, or perhaps the selection of diabetes-resistant wheat would be made. The address was appreciated by the audience and heartily applauded.

Dr. Robert W. Keeton, medical practitioner and specialist in diabetes, followed with an address on the therapy of insulin. The address was well illustrated and couched in language that the lay members of the audience were able to follow and appreciate. Dr. Keeton's address embodied a complete presentation of the cause and treatment of diabetes, and the very remarkable part that insulin has played in this treatment during the last two years, so that it is quite impossible to summarize the address in a few words. He stated that it was possible to resuscitate and restore patients who were in diabetic coma and that every form of diabetes, especially that of early youth which is usually rapidly fatal, has been brought under control by the use of insulin, but he specifically disclaimed that insulin could truly be termed a *cure* for diabetes. Experience so far indicated that in the majority of severe cases the use of insulin must be continued over a long period and

perhaps during the entire life of the patient.

In the discussion that followed the papers a number of questions in relation to the use of insulin were asked. In answer, Dr. Keeton said that the contraction of an infection by the diabetic always tends to materially lower the glucose tolerance of the patient and in the treatment with insulin the dosage must be markedly increased to offset this loss of tolerance through the infection. He also stated that there seems to be some peculiar but as yet unknown reaction occurring between the insulin and certain products in the blood accompanying acidosis that inactivates the insulin. Many observations have been made of the fact that the effect of insulin may be very suddenly lost and a marked drop in the glucose tolerance follow, which seems to be due to the inactivation of the insulin; on the other hand, with recovery from this condition there may be a very marked and unexpected increase in glucose tolerance which might be due to the sudden release of quantities of free insulin. In reply to the question as to whether there was any limit to the height to which the glucose tolerance might be raised by insulin, Dr. Keeton said that such a limit was not known, but that from an economic standpoint it was not at all advisable to strive for an unusually high glucose tolerance for the cost of insulin to maintain such a high tolerance was quite excessive; furthermore, it has been found that patients do just as well on a glucose intake that is sufficient to maintain their normal activities and provide for normal growth. In reply to the question as to whether insulin could eventually be withdrawn in severe cases, he stated that no doubt there might be cases in which the drug could be eventually withdrawn; still, within the present clinical experience such cases were few. In reply to the question at what stage of diabetes should a patient begin to use insulin, he replied that insulin should be used only when a patient cannot handle the proper maintenance diet; that is, if it is possible to provide a diet that will insure sufficient energy to the patient and at the same time not produce an excess of glucose in the blood, insulin should not be used.

Upon motion, both of the papers were received for publication in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION and a very hearty vote of thanks was extended to the speakers.

E. N. GATHERCOAL, *Secretary.*

DETROIT.

The second regular meeting of the Detroit Branch of the American Pharmaceutical Association was held November 9th at the Wayne County Medical Association.

After the usual excellent dinner, which was well attended, the meeting was called to order by President Crandall at 8:15 P.M. The minutes were read by the secretary and approved.

A motion by Mr. Hall was carried extending a vote of thanks to Parke, Davis & Co. for the use of the stereopticon machine furnished at the present meeting and the previous one, and also for the services of the operator.

It was moved by Mr. Hall, supported by Mr. Schettler and carried, that the following resolution be spread on our records.

> WHEREAS, our good friend and fellow pharmacist, Mr. John H. Webster, has obtained distinction and gained profound respect in the profession, and WHEREAS, advancement has come by virtue of his live professional spirit, his energy and leadership that are nationally felt, and his potent influence in our leading organizations, and WHEREAS, he recently was accorded the honor of election to the presidency of the National Association of Retail Druggists; *therefore, be it resolved* by this Branch that it has a thorough appreciation of the various successes and admirable qualities of its distinguished member, that it extend to him hearty congratulations in the period of his growing honor and that we hope for him, not unselfishly, a long span of happy and active years.

President Crandall renamed the chairman of the membership committee; Mr. Hall is to act in this capacity; the personnel remains unchanged.

Mr. Jones announced the program for the year was about complete.

The speaker for the January meeting is L. M. Rowe of Parke, Davis & Co., who has spent 8 years in developing physiological assay methods—he will speak on this subject.

At the February meeting, A. L. Van Amerengen will speak on Perfumes.

Speaker for the March meeting will be announced later.

For the April meeting, Dean Edward H. Kraus of the University of Michigan will give an illustrated lecture. This meeting is to be held at Ann Arbor.

For the May meeting we will have our usual interesting Prescription Clinic.

After discussing subjects for the program, President Crandall introduced the speaker of the evening, Wm. M. Wallace, chief chemist and superintendent of the Detroit Water Board.

Mr. Wallace presented a very interesting paper on the construction and history of Detroit's new filtration plant, which has been erected at the cost of $4,500,000.00.

The paper was accompanied by slides showing progressive steps in the construction of the filtration plant, which will soon be put into operation and supply the people of Detroit with pure clean water. Mr. Wallace astounded his listeners with the statement that the amount of water used per day in Detroit was 180 gallons per capita or nearly 200 million gallons.

After answering the many questions put to him by the assembly Mr. Wallace was tendered a rising vote of thanks.

BERNARD A. BIALK, *Secretary.*

NEW YORK.

The November 1923 meeting of the New York Local Branch of the American Pharmaceutical Association was called to order in the Lecture Hall of the New York College of Pharmacy Bldg., 115 West 68th St., N. Y. City, on Monday, November 12th, 1923, President Holton in the chair. Forty-nine members and friends were present.

The minutes of the preceding meeting were read and approved.

Treasurer's Report.—The treasurer's report was received and ordered filed.

Audit Committee.—Dr. Diner reported that he had checked the books and accounts of the treasurer and found them correct.

Membership Committee.—The following application was received for membership in the Local Branch.

H. C. F. Arnold, c/o E. R. Squibb & Sons, 23 Vine St., Brooklyn, N. Y.

Fraternal Relations.—Chairman Lehman reported that he hoped to arrange for a joint meeting with the Academy of Medicine in the near future.

Education and Legislation.—Chairman Eddy brought in a report, giving an outline of the pharmaceutical education requirements in the various States of the Union.

SCIENTIFIC SECTION.

Dr. Diekman brought in a report consisting of abstracts of various articles including: salt production and imports in the U. S. A.; bromine production and imports in the U. S. A.; ethylizing agents; microscopical structure of soap; cinchona, its alkaloids and preparations; decomposition of quinine salts in sterile acid solutions; comparisons of various optically active cocaines; artemisia species tested for santonine; proper solvents for extracting vanillin; liquid synthetic menthol; anti-measle virus inoculations; diethyl barbituric acid and its homologues; water-soluble compounds.

This was followed by the opening of the discussion on "Should the Course in Pharmacy Be Increased to 3 Years, 5 Days a Week, and Should the Practical Experience Requirement Be Abolished?"

The following participated in the discussion: Messrs. Lascoff, Lehman, Holton, Fischelis, Diekman, Hostmann, Mayer.

A letter was also read by the secretary from Dean Willis G. Gregory of Buffalo in which he presented his views.

HUGO H. SCHAEFER, *Secretary.*

PHILADELPHIA.

The November meeting of the Philadelphia Branch of the American Pharmaceutical Association was held Tuesday, November 13, at the Philadelphia College of Pharmacy and Science.

President White presided and introduced Dr. Ivor Griffith, Physiologic Chemist, Stetson Hospital, and Assistant Professor of Pharmacy at the Philadelphia College of Pharmacy and Science, who read a paper on, "The Romance of Insulin." He gradually led from the nauseous concoctions prescribed in the time of William Penn to the modern concentrated physiologic medicinal agents. He discussed the researches of Bernard of over 50 years ago, who attributed the cause of sugar sickness to some disturbance of the internal secretions of the pancreas, and the excellent work of Minkowski 20 years later. Minkowski established the definite fact that the pancreas was the balance organ governing the sugar in the blood. The speaker gave the latter much credit, emphasizing that upon his researches and that of others was based the wonderful discovery of Banting and MacLeod.

Banting and MacLeod were praised for their generosity in placing insulin on the market at a reasonable price.

Dr. Griffith discussed the administration of the drug and also the balance ratio that must be maintained in using it, a point of his paper being that, "Once an insulin patient, always an insulin patient." The drug is not a curative agent but merely assists in the assimilation of the sugar.

The contributor to the program of the eve-

ning was given a rising vote of thanks as an expression of the appreciation of the members of the Branch for his excellent paper.

A motion was presented by Mr. Hunsberger to investigate the plan of distributing insulin. The president appointed the following committee to report at the next meeting; Chairman, Ambrose Hunsberger, J. C. Peacock, F. E. Stewart.

A motion was presented by Mr. Eberle that the Branch appoint a committee to draft resolutions on the death of Dr. John F. Hancock. President White appointed the following committee: Chairman, J. W. England, Charles H. LaWall and E. G. Eberle.

Jos. W. E. HARRISSON, *Secretary.*

UNIVERSITY OF NORTH CAROLINA.

The second monthly meeting of the University of North Carolina Branch of the American Pharmaceutical Association for the year 1923–24 was held in the Pharmacy Building, Wednesday evening, October 31. Dr. William deB. MacNider, Kenan Professor of Pharmacology in the University School of Medicine, addressed the association on "The Relationship of the Pharmacist to the Physician and to the Public." He complimented the students on the organization of the local branch of the A. Ph. A. and stated that through such an organization much can be accomplished towards advancing the ideals of pharmacy as a profession particularly in North Carolina, but also in the South at large. In speaking of the history of pharmacy Dr. MacNider mentioned that this was the oldest of professions and that out of this calling the profession of medicine was born. Progress in both professions has been slow but higher educational requirements have overcome the obstacles to advancement. The longer and more rigid training now required of licentiates in pharmacy should place the druggist on the same high plane in the community as the physician.

Dr. MacNider further stated that the pharmacist should not deal in counter prescribing, as it was impossible for him to determine the illness the patient was suffering from and, consequently, his prescription was liable to do more harm than good. The lecturer also stressed the fact that the physician should not compound drugs for the same reason. A physician is not prepared to do the work of the pharmacist. The two professions are distinctly different and neither should attempt to supplant the other.

In conclusion Dr. MacNider emphasized the necessity for the ideals of a pharmacist to be reflected in his store. He should be more interested in the scientific development of his pharmacy and should not allow his eagerness to make money cause him to lose his professional standing in the community. The quickest way to ruin a drug store is to let it be known that the druggist will treat venereal diseases, or will sell alcohol illegally.

At the conclusion of Dr. MacNider's address, Mr. M. B. Melvin led in a discussion of abstracts from the pharmaceutical journals for the month.

C. R. WHITEHEAD, *Secretary.*

UNIVERSITY OF WASHINGTON.

The first meeting of the University of Washington Branch of the American Pharmaceutical Association was held on the 25th of October, 3 P.M., at Bagley Hall. Dean C. W. Johnson of the College of Pharmacy, acting as temporary chairman, presented the first draft of the By-Laws for the branch. These after being modified and discussed were adopted. Election of officers for the year then took place, with the following results: President, H. M. Shaw; Vice-President, A. Lehman; Secretary, H. A. Langenhan; Treasurer, J. R. Anderson.

Following the election, Dean Johnson briefly discussed the functions and purposes of the American Pharmaceutical Association after which he presented a very interesting and instructive report on the Asheville meeting. One question arose in the minds of the listeners who annually cope with Mt. Rainier, Mt. Hood, Mt. Baker, etc., "Where is the mountain the local committee advertised?"

Seventy-five were present at the meeting, among whom were thirty of the original signers of the petition. Members from the down town district were Louis Rubenstein and Cornelius Osseward. Others sent messages or letters of regret at being unable to attend because of the afternoon session.

The Branch has the pleasure of having as one of its members Mr. H. E. Holmes, president of Stewart & Holmes, Wholesale Druggists. He is a life member of the A. Ph. A. and one of its oldest members, having joined in 1880.

H. A. LANGENHAN, *Secretary.*

CONSTITUTION AND BY-LAWS OF UNIVERSITY OF WASHINGTON BRANCH OF AMERICAN PHARMACEUTICAL ASSOCIATION.

BY-LAWS.

1. Name.—This organization shall be known as the University of Washington Branch

of the American Pharmaceutical Association.

2. Objects.—The objects of the Branch shall be: (1) To interest students in pharmacy, graduates in pharmacy and other pharmacists of the State in the American Pharmaceutical Association. (2) To promote the professional and social welfare of the students in the College of Pharmacy and also to coöperate with graduates and other practical pharmacists in professional and social matters of pharmaceutical interest.

3. Members.—Any one belonging to the American Pharmaceutical Association may become a member of this Branch by signing these By-Laws.

4. Officers.—The officers shall be a President, a Vice-President, a Secretary and a Treasurer. The Secretary shall be a member of the instructional force of the University of Washington, College of Pharmacy.

5. Duties and Powers of Officers.—A. It shall be the duty of the President to preside at all meetings and to decide questions of parliamentary rule. He shall have power to call special meetings of the Branch subject to ratification by the executive committee.

B. The Vice-President shall preside at all meetings from which the president is absent and shall become endowed with all powers invested in the president when the latter is physically incapacitated, as decided by the advisory committee.

C. The Secretary shall have charge of all records and correspondence. It shall be his duty to submit reports of meetings promptly to the American Pharmaceutical Association and to attend each meeting and enter the minutes of such meeting in the records.

D. It shall be the duty of the Treasurer to collect all moneys of the Branch. He shall disburse as ordered by the minutes or by direction of the executive committee.

E. It shall be the duty of each officer to submit a written report at the annual meeting. The report of the treasurer shall be deemed accepted when audited and passed by the advisory committee.

6. Election.—The officers shall be elected and installed at the annual meeting of the Branch to be held in May of each year. They shall hold office until their successors are elected and qualified. In case of resignation or physical disability of any officer, a special election may be held at any regular meeting.

7. Meetings.—There shall be not less than six meetings held each year for the purpose of transaction of business and the reading of scientific papers. The first meeting shall be held in October and the annual meeting shall be held in May. At the first meeting of each year a program shall be presented outlining a schedule of meetings for the year.

8. Finances.—There shall be no regular dues for membership in this Branch. The money received from the American Pharmaceutical Association as part of the first year's dues of new members shall be expended only in the scientific and professional interest of the Branch. Assessments may be levied for social or other purposes by a majority vote of all members present at any regular meeting.

9. Quorum.—Fifteen active members of the Branch shall constitute a quorum for the transaction of business.

10. STANDING COMMITTEES.

A. Advisory Committee.—The Advisory Committee shall consist of three members of which at least one shall be a member of the faculty of the College of Pharmacy of the University of Washington.

B. Executive Committee.—The Executive Committee shall consist of the President, the Vice-President, the Secretary and the Treasurer. The executive committee shall have the power to act on matters relating to the Branch, subject to the approval of the Branch, and to appoint standing committees.

C. Finance Committee.—The Finance Committee shall consist of three members two of whom shall be the President and the Secretary.

D. Membership Committee.—The Membership Committee shall consist of three members whose duty it shall be to further the increase in membership.

E. Program Committee.—The Program Committee shall consist of three members of whom the Vice-President shall be chairman, and whose duty it shall be to arrange for a speaker at each meeting and such other social features as they may deem feasible. Any program calling for the expenditure of money must first be presented before the Branch for approval. The Secretary shall be *ex-officio* member of the program committee.

11. Amendments.—These By-Laws may be amended by a majority vote of members present at any regular meeting. Notice of proposed amendment, however, must be presented in writing at a regular meeting and may not be voted upon until the next regular meeting.

UNITED STATES PHARMACOPŒIA.

TENTH REVISION.

ABSTRACT OF PROPOSED CHANGES WITH NEW STANDARDS AND DESCRIPTIONS.*

PART III.

ORGANIC CHEMICALS.

(Part I of the Abstract of Proposed Changes also contained an abstract of many Organic Chemicals for the U. S. P. X.)

The Pharmacopœial Convention of 1920 recommended that abstracts of changes proposed for the U. S. P. X. and new standards and descriptions be published before final adoption, that those who are not members of the Revision Committee may have an opportunity for comment and criticism.

In compliance with this recommendation, the following abstracts are submitted. The nomenclature and the exact wording of the text do not necessarily represent that to be finally adopted and doses have not been appended. The official titles for trade-marked chemicals have not yet been announced, but trade-marked names will not be included even as synonyms.

Comments should be sent to the Chairman of the Revision Committee,

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Acetanninum (Acetyl Tannate—Dicetyl Tannin—Tannyl Acetate).—A product obtained by the acetylization of Tannic Acid.

Acetannin is a yellowish-white, or a grayish-white powder. It is odorless or has a slight acetous odor. It darkens in light.

Acetannin is only slightly soluble in water or alcohol, but soluble in ethyl acetate. It is soluble with gradual decomposition in aqueous solutions of alkali hydroxides and carbonates. It is also soluble in aqueous solutions of sodium borate and of sodium phosphate.

On warming 0.2 Gm. of Acetannin with 2 cc. of alcohol and 2 cc. of sulphuric acid, the odor of ethyl acetate is noticeable. A solution of Acetannin in sodium phosphate T. S. (1 in 100) after standing for several hours precipitates albumin from its solution, but this property is destroyed by the presence of an excess of alkali. Its solution in sodium borate does not precipitate albumin.

Ash: Not more than 0.3 per cent.

Dry about 1 Gm. of Acetannin, accurately weighed, for 3 hours at 100° C. The loss does not exceed 3 per cent.

Shake 1 Gm. of Acetannin with 50 cc. of water during 5 minutes and filter. 25 cc. of the filtrate require for neutralization not more than 1.2 cc. of tenth-normal sodium hydroxide, using 3 drops of phenolphthalein T. S. as indicator (*free acid*). To the remainder of the filtrate add 2 drops of ferric chloride T. S. A green but not a blue color is produced (*free tannic acid*).

Digest 1 Gm. of Acetannin with a solution of 2 Gm. of sodium bicarbonate in 200 cc. of water for 3 hours at about 40° C. Filter through a counterbalanced filter or a Gooch crucible, wash the insoluble residue with 4 portions of water, 10 cc. each, and dry to constant weight at 110° C. The weight of the residue does not exceed 0.15 Gm.

Digest 1 Gm. of Acetannin with 200 cc. of water for 2 hours, shaking at frequent intervals. Filter through a dry filter into a dry flask, rejecting the first 20 cc. of the filtrate. Evaporate 100 cc. of the subsequent filtrate to dryness on the water-bath and dry the residue for 3 hours at 100° C. The weight of the residue does not exceed 0.03 Gm. (*soluble substances*).

Preserve in well-closed containers, protected from light.

Acidum Acetylsalicylicum (Aspirin). $C_6H_4.O(CH_3CO).COOH$.—It contains not less than 99.5 per cent. of absolute acetylsalicylic acid.

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Acetylsalicylic Acid occurs in small, colorless crystals or needles, or as a white crystalline powder. It is odorless and stable in dry air. In contact with moisture, it gradually decomposes into salicylic and acetic acids.

One Gm. of Acetylsalicylic Acid dissolves in approximately 300 cc. of water, in 5 cc. of alcohol, in 17 cc. of chloroform and in 10 to 15 cc. of official ether at 25° C.; it is less soluble in absolute ether. It is also soluble with the decomposition in solutions of alkali hydroxides and carbonates.

Its melting point, when determined in a bath preheated to 120° C., is not below 132° C.

When the Acid is heated with water for several minutes, then cooled and a drop or two of ferric chloride T. S. added, a violet-red color is produced.

Boil about 0.5 Gm. of Acetylsalicylic Acid with 10 cc. of sodium hydroxide T. S. for a few minutes, cool and add 10 cc. of diluted sulphuric acid. A white precipitate of salicylic acid is produced and the odor of acetic acid is perceptible. Filter, add to the filtrate 3 cc. of alcohol and 3 cc. of sulphuric acid and warm. The odor of ethyl acetate becomes noticeable.

Ash: Not more than 0.05 per cent.

A solution of 0.5 Gm. of Acetylsalicylic Acid in 10 cc. of sulphuric acid is not darker than slightly yellow.

A solution of 0.5 Gm. of the acid in 10 cc. of warm sodium carbonate T. S. is clear.

Shake 1 Gm. of Acetylsalicylic Acid with 20 cc. of distilled water and 1 cc. of nitric acid for one minute and filter. Five-cc. portions of the filtrate yield no opalescence or turbidity at once on the addition of a few drops of silver nitrate T. S. (*chloride*) or barium chloride T. S. (*sulphate*).

Warm 1 Gm. of Acetylsalicylic Acid with 10 cc. of distilled water and 1 cc. of hydrochloric acid for two minutes, dilute with 40 cc. of water, cool and filter. The filtrate does not respond to the test for heavy metals. (*Part II, Test No.* —.)

Dissolve 1 Gm. of Acetylsalicylic Acid in 5 cc. of alcohol and allow the solution to evaporate spontaneously in a dish in a place protected from dust. A perfectly white crystalline residue is obtained. (Coloring matter, resinous substances.)

Dissolve 0.1 Gm. of Acetylsalicylic Acid in 1 cc. of alcohol, dilute the solution with 48 cc. of cold water and add at once 1 cc. of freshly prepared diluted ferric ammonium sulphate solution (made by adding 1 cc. of normal hydrochloric acid to 2 cc. of ferric ammonium sulphate T. S., and diluting with water to 100 cc.). The coloration produced, if any, in one-half minute, is not greater than that produced in a parallel test, using 1 cc. of solution containing 0.1 Gm. of Salicylic Acid in 1 liter of water.

Assay.—Weigh accurately about 1.5 Gm. of Acetylsalicylic Acid, previously dried for three hours over sulphuric acid, add 50 cc. of half-normal sodium hydroxide, boil gently for ten minutes, then titrate the excess of acidum hydroxide with half-normal sulphuric acid, using three drops of phenolphthalein T. S., as indicator. Each cc. of half-normal sodium hydroxide corresponds to 0.045027 Gm. of absolute acetylsalicylic acid.

Acidum Lacticum.—Test for glycerin is omitted.

Acidum Phenylethylbarbituricum (Luminal-Phenobarbital-Phenobarbiton). $CO(NH.CO)_2$-$C(C_2H_5)(C_6H_5)$.—Phenobarbital occurs in white, glistening, small crystals or as a white crystalline powder. It is odorless and is stable in the air.

One Gm. of Phenobarbital dissolves in about 1000 cc. of water, in 8 cc. of alcohol, in 40 cc. of chloroform, in 13 cc. of ether, in about 700 cc. of benzene at 25° C. It is soluble in alkali hydroxides and carbonates.

It melts between 172 and 174° C.

Its saturated aqueous solution is acid to litmus paper.

On boiling about 0.2 Gm. with 5 cc. of 25 per cent. sodium hydroxide, ammonia is evolved.

Shake about 0.3 Gm. of Phenobarbital for 2 minutes with 1 cc. of normal sodium hydroxide and 5 cc. of water, filter and divide this filtrate into 2 portions. To 1 portion add mercuric chloride T. S. A white precipitate is produced. To the other portion add silver nitrate T. S. a few drops at a time. A white precipitate is produced which at first redissolves but becomes insoluble when an excess of the silver nitrate has been added.

Ash from 0.5 Gm. is negligible.

A solution of 0.2 Gm. of Phenobarbital in 2 cc. of sulphuric acid is colorless or at most only faintly yellow (*readily carbonizable substances*).

Boil 2 Gm. of Phenobarbital with 10 cc. of alcohol under a reflux condenser during 3 minutes. A clear and complete solution results (phenylbarbituric acid).

Albutanninum (Albumin Tannate—Tannalbumin).—A compound of albumen and tannic acid.

Albutannin is a yellowish-white, odorless powder.

It is almost insoluble in water, alcohol, chloroform, or ether. It is decomposed by aqueous solutions of alkali hydroxides or carbonates.

Ash: Not more than 0.3 per cent.

Dry about 1 Gm. of Albutannin for 3 hours at 100° C. The loss does not exceed 6 per cent.

Shake 1 Gm. of Albutannin with 50 cc. of water for 5 minutes and filter. 25 cc. of the filtrate require for neutralization not more than 1 cc. of tenth-normal sodium hydroxide using 3 drops phenolphthalein T. S. indicator (*free acid*).

Digest 1 Gm. of Albutannin with 200 cc. of water for 2 hours, shaking at frequent intervals. Filter through a dry filter into a dry flask, rejecting the first 20 cc. of the filtrate. Evaporate 100 cc. of the subsequent filtrate to dryness on the water-bath and dry the residue for 3 hours at 100° C. The weight of the residue does not exceed 0.06 Gm. (*soluble substances*).

Place 1.5 Gm. of Albutannin in a 500-cc. glass-stoppered flask. Dissolve 2.5 Gm. of sodium bicarbonate in 250 cc. of water, warm the solution to 40° C. and gradually add it with agitation to the albutannin. Then add a filtered aqueous solution of 0.25 Gm. of pepsin in 5 cc. of water. Place the flask in a suitable bath, maintain at 40° C. for 2 hours, inverting the flask every ten minutes. Allow to remain in the bath for one-half hour longer without inverting. Filter through a counterbalanced filter, wash the undissolved residue with 4 portions of cold water, 10 cc. each, and dry to constant weight at 110° C. The weight of the residue does not exceed 0.45 Gm.

Place 1.5 Gm. of Albutannin in a 500-cc. glass-stoppered flask. Mix 20 cc. of normal hydrochloric acid with 230 cc. of water, warm the mixture to a temperature of 40° C. and add it gradually, with agitation, to the albutannin. Then add a filtered aqueous solution of 0.25 Gm. pepsin in 5 cc. of water. Place the flask in a suitable bath, maintain at 40° C. for 2 hours, inverting the flask during the digestion every 10 minutes. Allow to remain in the bath for another half-hour without inverting. Filter through a counterbalanced filter, wash the undissolved residue with 4 portions of cold water, 10 cc., each and dry at 110° C. to constant weight. The weight of the residue is not more than 0.37 Gm.

Preserve protected from light.

Alcohol.—Amount of solids changed from limit of 0.002 Gm. in 50 cc. to 0.001 Gm. in 40 cc.

Methyl Alcohol test altered—Dilute the alcohol with water to contain about 5 per cent. by volume of ethyl alcohol. To 5 cc. of this diluted alcohol contained in a test tube add 0.5 cc. of phosphoric acid and 2 cc. of a 3 per cent. aqueous solution of potassium permanganate and allow the mixture to stand for 10 minutes. Add 1 cc. of an aqueous 10 per cent. solution of oxalic acid and let stand until the solution is clear brown. Now add 1 cc. of sulphuric acid, cool to about 25° C., add 5 cc. of fuchsin sulphurous acid T. S., mix well and allow to stand for 10 minutes. At the end of this time the solution, when observed against a white background, may have a reddish or pale green color, but not a distinct blue or violet color (*methyl alcohol*).

Alcohol Dehydratum.—No change.

Alcohol Dilutum.—Formula by weight is omitted.

Amidopyrina (Pyramidonum—Dimethylaminoantipyrine—amidopyrine). $C_3ON_2(CH_3)_4.C_6H_5$.

Pyramidon occurs as colorless or white, small crystals, or as a crystalline powder. It is odorless, and stable in the air.

One Gm. of Pyramidon dissolves in 18 cc. of water, in 1.5 cc. of alcohol, in 12 cc. of benzene, in 1 cc. of chloroform, in 13 cc. of ether, at 25° C.

It melts between 107° and 109° C.

Its aqueous solution (1 in 25) is slightly alkaline to litmus paper.

To 5 cc. of an aqueous solution of Pyramidon (1 in 25) add 3 drops of diluted hydrochloric acid and 1 cc. of ferric chloride T. S. A bluish-violet color is produced. On the subsequent addition of a few cc. of diluted sulphuric acid, the color changes to violet-red.

Addition of 5 drops of silver nitrate T. S. to 5 cc. of an aqueous solution of Pyramidon (1 in 25) produces an intensely violet color (oxidizing substances yield the same color). On allowing the mixture to stand, a grayish-black precipitate of metallic silver is deposited.

To a solution of about 0.02 Gm. of Pyramidon in 5 cc. of water, add 2 drops of sulphuric acid and 2 drops of a 10 per cent. solution of sodium nitrite. A transient blue color is produced which disappears quickly, the liquid remaining colorless (the appearance of a green color indicates antipyrine).

An aqueous solution of Pyramidon (1 in 25) when added to a freshly prepared solution of potassium ferricyanide containing a little ferric chloride produces at once a dark blue color or precipitate (difference from *antipyrine*).

Ash not more than 0.1 per cent.

A solution of 0.1 Gm. of Pyramidon in 1 cc. of sulphuric acid is colorless (*readily carbonizable substances*).

Its aqueous solution (1 in 25) does not respond to the test for heavy metals (page —).

The addition of a few drops of silver nitrate T. S. to 5 cc. of an aqueous solution of Pyramidon (1 in 25) previously acidulated with a few drops of diluted nitric acid, produces no turbidity at once (*chloride*).

Argento-Proteinum Fortis (Strong Silver-Protein).—Silver oxide rendered colloidal by the presence of or combination with proteins. It contains from 7.5 to 8.5 per cent. of silver (Ag).

Strong Silver-Protein is a brown, odorless powder. It is usually somewhat hygroscopic.

It is freely soluble in water, but almost insoluble in alcohol, chloroform or ether.

Heat about 0.2 Gm. of Strong Silver-Protein in a porcelain crucible until all the carbonaceous matter is burned off, warm the residue with 1 cc. nitric acid, dilute with 10 cc. of water and add hydrochloric acid. A white precipitate is produced which dissolves in ammonia water.

The addition of 2 cc. of a 1 per cent. aqueous solution of sodium chloride to 10 cc. of an aqueous solution (1 in 100) of Strong Silver-Protein causes no turbidity.

The addition of 2 cc. of diluted hydrochloric or diluted sulphuric acid, or of lead acetate, zinc sulphate, or silver nitrate T. S. to 5 cc. of an aqueous solution (1 in 100) of Strong Silver-Protein usually produces no immediate precipitation.

Ferric chloride T. S. added to its aqueous solution (1 in 100) discharges the dark color and a precipitate is gradually produced. With mercuric chloride T. S. a white precipitate is formed and the supernatant liquid becomes colorless or nearly so.

Dissolve 0.5 Gm. of Strong Silver-Protein in 3 cc. of water. Pour this solution drop by drop with stirring into 17 cc. of alcohol. Filter, and refilter if necessary until a clear filtrate is obtained, keeping the funnel covered during the filtration. Dilute 10 cc. of the filtrate with an equal volume of water, add 2 drops of diluted nitric acid and 5 drops of a 1 per cent. aqueous solution of sodium chloride and mix well. A distinct turbidity is produced (difference from mild *silver-protein*).

Assay.—Weigh accurately about 2 Gm. of Strong Silver-Protein and ignite it in a porcelain crucible until all the carbon is burned off. Transfer as much as possible of the residue into a beaker, add to the crucible 5 cc. of nitric acid, warm to dissolve any adhering silver and transfer the solution into the beaker with the aid of a little water. Cover the beaker and heat on the water-bath until all the metallic silver is dissolved, adding a little more nitric acid if necessary. Filter into a flask, wash well the insoluble residue with water, cool and dilute with water, if necessary, to about 50–75 cc., add 2 cc. of ferric ammonium sulphate T. S. and titrate with tenth-normal ammonium sulphocyanate. Each cc. of tenth-normal ammonium sulphocyanate corresponds to 0.01079 Gm. of silver.

Preserve in well-closed containers, protected from light.

Argento-Proteinum Mite. (Mild Silver-Protein).—Silver oxide rendered colloidal by the presence of or combination with proteins. It contains from 19 to 25 per cent. of Silver (Ag).

Mild Silver-Protein occurs in dark brown or almost black shining scales or granules. It is odorless, and is frequently hygroscopic.

It is freely soluble in water, but almost insoluble in alcohol, chloroform or ether.

Heat about 0.1 Gm. of Mild Silver-Protein in a porcelain crucible until all the carbonaceous matter is burned off, warm the residue with one cc. nitric acid, dilute with 10 cc. of water and add hydrochloric acid. A white precipitate is produced which dissolves in ammonia water.

The addition of 2 cc. of a 1 per cent. aqueous solution of sodium chloride to 10 cc. of an aqueous solution (1 in 100) of Mild Silver-Protein causes no turbidity.

Diluted hydrochloric or sulphuric acid or solutions of heavy metals usually produce an immediate precipitation in its aqueous solutions.

Ferric chloride T. S. added to its aqueous solution (1 in 100) discharges the dark color and a precipitate is gradually produced. With mercuric chloride T. S. a white precipitate is formed and the supernatant liquid becomes colorless or nearly so.

Dissolve 0.5 Gm. of Mild Silver-Protein in 3 cc. of water. Pour this solution drop by drop with stirring into 17 cc. of alcohol. Filter and refilter if necessary until a clear filtrate is obtained, keeping the funnel covered during the filtration. Dilute 10 cc. of the filtrate with an equal volume of water, add 2 drops of diluted nitric acid and 5 drops of a 1 per cent. aqueous solution of sodium chloride and mix well. No turbidity is produced within one minute (difference from strong silver-protein).

Assay.—Proceed as directed under Argento-Proteinum Fortis, using about 1 Gm. for the assay.

Preserve in well-closed containers, protected from light.

Arsphenaminum (Arsphenolamine Hydrochloride—Arsenobenzol—Salvarsan—3-diamino, 4-dihydroxy Arsenobenzene Hydrochloride). $HCl.NH_2.OH.C_6H_2As:AsC_6H_3.OH.NH_2.HCl + 2H_2O$.

Arsphenamine contains from 30 to 32 per cent. of arsenic (As), and it complies with the toxicity requirements, control and labeling regulation of the United States Public Health Service.

Arsphenamine is prepared for sale in sealed containers of colorless glass, from which the air has been excluded either by production of a vacuum or by displacement with a non-oxidizing gas.

Arsphenamine is a light yellow powder. It is odorless or has a slight odor, and is hygroscopic. In dry state or in solution it is oxidized by exposure to the air, becoming darker and more toxic.

It is soluble in water, alcohol or glycerin, but only very slightly soluble in chloroform or ether.

Its aqueous solution (1 in 100) is acid to litmus (difference from *Neoarsphenamine*).

Add sodium hydroxide T. S. drop by drop to an aqueous solution of Arsphenamine (1 in 100). A precipitate is formed (difference from *Neoarsphenamine*) which readily dissolves in an excess of the sodium hydroxide. Sodium carbonate T. S. or solution of Sodium bicarbonate also produce a precipitate but it is insoluble in an excess of the reagent. It is also precipitated by mercuric potassium iodide T. S. (difference from *neoarsphenamine*).

An aqueous solution of Arsphenamine (1 in 100) is unaffected by the addition of diluted hydrochloric acid, diluted nitric acid, or by acetic acid even after heating (difference from *neoarsphenamine*). With an excess of hydrochloric acid a precipitate is formed. Diluted sulphuric acid or solutions of alkali sulphates immediately produce a precipitate.

The addition of 2 drops of freshly prepared ferric chloride T. S. to 5 cc. of the aqueous solution (1 in 1000) produces a brownish, violet tinted color, rapidly changing to deep red.

On adding 3 cc. of silver nitrate T. S. to 5 cc. of an aqueous solution of Arsphenamine (1 in 100) a red color isp roduced, but no precipitate is formed even after standing at the ordinary room temperature for 10 minutes (difference from *neoarsphenamine*). When 6 cc. of silver nitrate T. S. is added to the same volume of solution a precipitate is immediately formed which blackens on heating. On now adding 5 cc. of nitric acid and again heating the precipitate becomes white and dissolves in ammonia water.

The solution resulting from the assay yields with hydrogen sulphide a yellow precipitate soluble in ammonium carbonate T. S.

Assay.—Weigh accurately about 0.2 Gm. of Arsphenamine and transfer it into a glass-stoppered 200–250 cc. Erlenmeyer flask. Add 1 Gm. of finely powdered potassium permanganate and 5 cc. of diluted sulphuric acid and allow to stand for 10 minutes, rotating the contents of the flask during this time to insure thorough mixing. Now add 10 cc. of concentrated sulphuric acid in portions of about 2 cc., rotating the flask after each addition. When the reaction has ceased, add sufficient hydrogen dioxide solution to dissolve completely the brown precipitate (about 5 to 7 cc.). Towards the end, the hydrogen dioxide is added drop by drop to avoid any great

excess. Dilute with 25 cc. of distilled water and boil gently over an asbestos wire gauze for 15–20 minutes, or until the excess of hydrogen dioxide is expelled. Dilute with 50 cc. of distilled water and add tenth-normal potassium permanganate until the liquid is faintly pink, then discharge the pink color by addition of a drop of tenth-normal oxalic acid. Cool the solution, add 2.5 Gm. of potassium iodide, stopper the flask tightly and allow to stand in a cool, dark place for 1 hour. Then titrate the liberated iodine with tenth-normal sodium thiosulphate without the use of starch indicator. Make a blank test with the same quantities of the reagents and correct the assay for the volume of tenth-normal sodium thiosulphate used in the blank. Each cc. of tenth-normal sodium thiosulphate corresponds to 0.003748 Gm. As.

Benzocainum (Anasthesin—Ethylaminobenzoate). $C_6H_4NH_2COO(C_2H_5)$.—Benzocaine occurs as small white or colorless crystals, or as a white crystalline powder. It is odorless, and stable in the air.

One Gm. of Benzocaine dissolves in about 2500 cc. of water, in 5 cc. of alcohol, in 2 cc. of chloroform, in 4 cc. of ether, in 30 to 50 cc. of almond oil or olive oil, at 25° C. It is soluble in diluted acids.

It melts between 88° and 90° C.

When boiled with alkali hydroxides, alcohol is liberated.

Dissolve about 0.02 Gm. of Benzocaine in 10 cc. of water with the aid of a few drops of diluted hydrochloric acid, add to the solution 5 drops of 10 per cent. sodium nitrite solution, followed by 2 cc. of a solution of 0.1 Gm. of betanaphthol in 5 cc. of sodium hydroxide T. S. An orange-red precipitate is produced.

Its aqueous solution (1 in 50) prepared with the aid of a slight excess of diluted hydrochloric acid yields a precipitate with iodine T. S. and instantly reduces potassium permanganate T. S.

Ash: Not more than 0.1 per cent.

A solution of 0.1 Gm. of Benzocaine in 1 cc. of sulphuric acid is colorless (*readily carbonizable substances*).

Dissolve 1 Gm. of Benzocaine in 10 cc. of neutral alcohol. A clear solution results. Dilute this solution with 10 cc. of water, add 2 drops of phenolphthalein T. S. and 1 drop of tenth-normal sodium hydroxide. A red color is produced (*free acid*).

The addition of a few drops of silver nitrate T. S. to a solution of 0.2 Gm. of Benzocaine in 5 cc. of alcohol, previously acidulated with a few drops of diluted nitric acid, produces no immediate turbidity (*chloride*).

An aqueous solution of Benzocaine (1 in 20) prepared with the aid of just sufficient hydrochloric acid, does not respond to the test for heavy metals (page —).

Heat a crucible to redness and introduce, in small portions, an intimate mixture of 0.2 Gm. of Benzocaine, about 0.5 Gm. of potassium nitrate, and about 0.3 Gm. of anhydrous sodium carbonate. Maintain a red heat until the reaction ceases, then boil the cooled residue for five minutes with 10 cc. of diluted sulphuric acid, filter, and wash the undissolved residue with 10 cc. of distilled water. Evaporate the filtrate and washings until sulphuric acid vapors begin to evolve. The residue, dissolved in 5 cc. of distilled water, meets the requirements of the test for arsenic (page —).

Caffeina Citrata.—The rubric has been changed from "Citrated Caffeine contains, when dried to constant weight at 80° C., not less than 48 per cent. of anhydrous caffeine ($C_8H_{10}O_2N_4$ = 194.12)" to "A mixture of Caffeine and Citric Acid. It contains, when dried to constant weight at 80° C., not less than 48 per cent. of anhydrous Caffeine."

The formula for its preparation is omitted.

Solubility statement changed to "One Gm. of Citrated Caffeine dissolves in about 4 cc. of warm water. On diluting the solution with an equal volume of water, a portion of the Caffeine gradually separates, which redissolves on the further addition of water."

Added identity test, "Add 1 cc. of mercuric sulphate T. S. to 5 cc. of an aqueous solution of Citrated Caffeine (1 in 100), heat the mixture to boiling and add 1 cc. of potassium permanganate T. S. A white precipitate is formed."

Calcii Iodobehenas (Calioben).—Calioben consists principally of Calcium Monoiodobehenate $(C_{21}H_{43}ICO_2)_2Ca$. It contains, when dried to constant weight at 100° C., not less than 22.5 per cent. of Iodine (I).

Calioben is a white or yellowish powder, unctuous to the touch. It is odorless or has a slight fat-like odor.

It is insoluble in water, very slightly soluble in alcohol or ether, but is freely soluble in chloroform.

When strongly heated, it is decomposed with the evolution of white vapors, having an odor of burning fat and violet vapors of iodine.

Heat about 0.2 Gm. of Calioben with 2 cc. of sulphuric acid in a water-bath during 5 to 10 minutes, cool, add 2 cc. of chloroform and shake gently. The chloroform, upon separation, is colored violet.

Add 10 cc. of diluted hydrochloric acid to 1 Gm. of Calioben. No effervescence occurs (*carbonate*). Add 40 cc. of water and boil gently. A layer of fatty acid separates on the surface, which is soluble in ether or chloroform. Render the aqueous layer slightly alkaline with ammonia and add an excess of ammonium oxalate T. S. (about 5 cc.), a white precipitate of calcium oxalate is produced. Allow to stand for four hours, filter, evaporate the filtrate to dryness and ignite. The residue does not exceed 0.003 Gm. (*magnesium and alkali salts*).

Dried to constant weight at 100°, Calioben loses not more than 2 per cent. of its weight.

One Gm. of Calioben dissolves in 10 cc. of warm chloroform with not more than an opalescence.

Triturate 1 Gm. of Calioben with 10 cc. of water. The mixture is neutral to litmus paper. Add 15 cc. more water, mix well during 5 minutes and filter. Evaporate 10 cc. of the filtrate to dryness on the water-bath and dry to constant weight at 120° C. The weight of the residue does not exceed 0.001 Gm. (*soluble salts*). Other 5-cc. portions of the filtrate tested for halogens and sulphate as described under turbidimetric tests (see page —) show no greater turbidity than 0.1 cc. of fiftieth-normal hydrochloric acid or sulphuric acid.

Weigh accurately 1 Gm. of Calioben previously dried to constant weight at 100°, add 40 cc. of tenth-normal hydrochloric acid and boil gently in a flask until thoroughly decomposed. Cool and titrate the excess of acid with tenth-normal sodium hydroxide, using methyl orange T. S. as indicator. Not less than 20 cc. nor more than 20.6 cc. of the tenth-normal is consumed.

Assay.—Mix about 0.5 Gm. of Calioben, previously dried to constant weight at 100° C. and accurately weighed, with about 3 Gm. of anhydrous potassium carbonate. Place the mixture in a platinum crucible, cover with about 1 Gm. more of anhydrous potassium carbonate and heat moderately, gradually increasing the heat, but not exceeding a dull redness, until completely carbonized. Extract the residue with boiling distilled water and wash it on the filter with boiling water until the washings produce no opalescence with silver nitrate T. S. Heat the combined washings, which measure about 150 cc. on a water-bath and add an aqueous solution of potassium permanganate (1 in 20) in small portions, until the hot liquid remains permanently pink. Add just enough alcohol to remove the pink tint, cool to room temperature, dilute to 200 cc., mix well and filter through a dry filter, rejecting the first 50 cc. of filtrate. To 100 cc. of the subsequent clear filtrate add about 1 Gm. of potassium iodide (free from iodate) and an excess of diluted sulphuric acid, and titrate the liberated iodine with tenth-normal sodium thiosulphate, adding starch T. S. near the end of the titration. Each cc. of tenth-normal sodium thiosulphate used corresponds to 0.002115 Gm. of iodine.

Preserve in well-closed containers protected from light.

Carbo Ligni.—Ash: "Not more than 7 per cent." instead of 7.5.

Carbonei Tetrachloridum (Carbon Tetrachloride). CCl_4.—Carbon Tetrachloride is a clear, colorless, mobile liquid. It has a characteristic, ethereal odor, resembling that of chloroform.

It is not inflammable. In presence of moisture it is slowly decomposed by light.

Carbon Tetrachloride dissolves in 2000 times its volume of water. It is miscible with alcohol, chloroform, ether, benzene petrolatum, benzin, and is soluble in most of the fixed and volatile oils.

Specific gravity: From 1.588 to 1.590 at 25° C.

It boils between 76° and 77° C., but volatilizes at lower temperatures.

Evaporate 50 cc. of Carbon Tetrachloride in a dish on a water-bath to about 1 cc. and then allow to evaporate spontaneously to dryness. The residue, if any, is odorless. Now dry at 100° C. and weigh. The weight of the residue does not exceed 0.001 Gm.

Shake 15 cc. of Carbon Tetrachloride with 25 cc. of water during 5 minutes and allow

the liquids to separate completely. The aqueous layer is neutral to litmus, and 10-cc. portions are not affected by a few drops of silver nitrate T. S. (*chloride*), nor colored blue by the addition of a few drops each of potassium iodide T. S. and starch T. S. (*free chlorine*).

Warm 10 cc. of Carbon Tetrachloride with 10 cc. of 25 per cent. potassium hydroxide solution for 5 minutes at about 60° C. with frequent agitation. No yellow or brown color develops in either liquid (*aldehyde*).

Transfer 20 cc. of Carbon Tetrachloride into a glass-stoppered cylinder previously rinsed with sulphuric acid. Add 5 cc. of colorless sulphuric acid, shake vigorously for five minutes, then allow the liquids to separate completely. The sulphuric acid layer is colorless or nearly so (*readily carbonizable substances.*)

Mix 10 cc. of Carbon Tetrachloride with an equal volume of a 10 per cent solution of potassium hydroxide in dehydrated alcohol and allow the mixture to stand for one hour. Add 5 cc. of acetic acid and follow with one cc. of copper sulphate T. S. No yellow precipitate is formed within two hours (*carbon disulphide*).

Preserve in well-closed containers protected from light.

Carbromalum (Adalin Bromdiethylacetylcarbamide). $C(C_2H_5)_2Br.CONH.CONH_2$.

Carbromal is a white, crystalline odorless powder.

One Gm. of Carbromal dissolves in about 3000 cc. of water, in 18 cc. of alcohol, in 3 cc. of chloroform, in 14 cc. of ether, at 25° C. It is very soluble in boiling alcohol. It dissolves in sulphuric, nitric, and in concentrated hydrochloric acids, from which it is precipitated by dilution with water. It is also soluble in solutions of alkali hydroxides.

It melts between 116° and 117° C.

On boiling about 0.2 Gm. of Carbromal with 5 cc. of 10 per cent. aqueous sodium hydroxide solution, ammonia is evolved.

Mix 0.1 Gm. of Carbromal with 0.5 Gm. of anhydrous Sodium Carbonate and ignite gently until completely decomposed. Dissolve the residue in 5 cc. of hot water, cool, acidulate with acetic acid and filter. Add to the filtrate 2 cc. of chloroform and introduce chlorine water drop by drop. On shaking, the chloroform acquires a red-brown color.

Ash: From 0.5 Gm. is negligible.

A solution of 0.2 Gm. of Carbromal in 2 cc. of sulphuric acid is colorless or at most faintly brown (*readily carbonizable substances*).

Shake 1 Gm. of Carbromal with 20 cc. of water during 5 minutes and filter. The filtrate is neutral to litmus paper and 5-cc. portions tested for halogen and sulphate as described under the turbidimetric test (see page —) show no greater turbidity than 0.1 cc. of fiftieth-normal hydrochloric acid or sulphuric acid.

Chloramina (Chloramine T. Sodium paratoluenesulphonochloramide). $C_6H_4(CH_3)(SO_2NNaCl) + 3H_2O$.

It contains from 11.5 to 13 per cent. active chlorine.

Chloramine T. occurs as white or faintly yellow crystals or crystalline powder. It has a slight odor of chlorine and slowly decomposes on exposure to air, losing chlorine.

One Gm. of Chloramine T. dissolves in about 7 cc. of water at 25° C. and in about 2 cc. of boiling water. It is decomposed by alcohol, and it is insoluble in benzene, chloroform or ether.

At about 95° to 100° C. it loses all of its water of crystallization.

An aqueous solution of Chloramine T. (1 in 20) is alkaline to litmus or phenolphthalein T. S.

The addition of potassium iodide T. S. to an aqueous solution of Chloramine T. (1 in 20) causes the liberation of iodine, but no bromine is liberated from alkali bromides unless the mixture is acidulated with an acid (*difference from dichloramine T.*).

Acids produce in an aqueous solution of Chloramine T. (1 in 20) a white turbidity or precipitate which redissolves in an excess of alkali hydroxide solutions. With strong mineral acids chlorine is simultaneously liberated.

On adding 2 cc. of sulphuric acid to 0.1 Gm. of Chloramine T. chlorine is evolved but no appreciable darkening occurs (*readily carbonizable substances*).

Assay.—Weigh accurately about 0.5 Gm. of Chloramine T., dissolve it in 50 cc. of water, add 5 cc. of potassium iodide T. S. and 5 cc. of acetic acid, allow the mixture to stand for ten

minutes, then titrate the liberated iodine with tenth-normal sodium thiosulphate, using starch T. S. as indicator. Each cc. of tenth-normal sodium thiosulphate corresponds to 0.001773 Gm. of chlorine.

Preserve in well-closed containers, protected from light.

Chlorcosanum.—A liquid, chlorinated paraffin.

Chlorcosane is a light yellow to light amber-colored, thick, oily liquid. It is odorless, and stable in the air.

It is insoluble in water, slightly soluble in alcohol, but miscible with benzene, carbon tetrachloride, chloroform or ether.

Specific gravity: 1.00 to 1.07 at 25° C.

Boil 5 drops of Chlorcosane with 10 cc. of alcoholic potassium hydroxide T. S. under a reflux condenser for 30 minutes, cool, dilute with 10 cc. of distilled water and acidulate with diluted nitric acid. The liquid becomes turbid from the separation of small, oily drops. Shake the mixture with an equal volume of ether, allow the liquids to separate, draw off the clear aqueous layer and add to it a few cc. of silver nitrate T. S. A white precipitate is formed.

Ash: Not more than 0.1 per cent.

"Shake about 5 Gm. of Chlorcosane with 25 cc. of warm distilled water for five minutes and filter through a filter paper moistened with distilled water. The filtrate is neutral to litmus paper (*acids or alkalies*) and on adding a few drops each of potassium iodide T. S. and of starch T. S. to 5 cc. of the filtrate, no blue color is produced (*free chlorine*). Another 5-cc. portion of the filtrate shows no more chloride than 0.05 cc. of fiftieth-normal hydrochloric acid (*chloride*)."

Dissolve 10 Gm. of Chlorcosane in 10 cc. of carbon tetrachloride in a 50-cc. volumetric flask, dissolve in this solution about 0.5 Gm. of powdered Dichloramine T. accurately weighed and allow the mixture to stand at 40° C. for 4 hours, protected from light. Cool and dilute with sufficient carbon tetrachloride to make the volume 50 cc. Transfer 10 cc. of this dilution into a glass-stoppered flask, add 10 cc. of glacial acetic acid and 5 cc. of potassium iodide T. S. and tightly stopper the flask. Allow to stand for 10 minutes, then add 25 cc. of distilled water and titrate the liberated iodine with tenth-normal sodium thiosulphate, using starch T. S. as indicator. Run a parallel blank with the same quantity of the same Dichloramine T. and the other reagents, but using sufficient carbon tetrachloride to make the volumes 50 cc. The difference between the volumes of tenth-normal sodium thiosulphate consumed in the blank and in the test is not greater than 0.6 cc. (*completeness of chlorination*).

Cocainæ Hydrochloridum.—Statement of origin is omitted.

Melting point.—"Not below 183° C." instead of "between 183° and 191° C."

Ash changes.—"Ash from 0.1 Gm. is negligible."

Added test.—"A solution of 0.5 Gm. of Cocaine Hydrochloridein, 10 cc. of distilled water requires not more than 0.5 cc. of fiftieth-normal sodium hydroxide to neutralize, using one drop of methyl red as indicator."

Codeinæ Sulphas.—Statement of origin is omitted.

Added test.—"A solution of 0.5 Gm. of Codeine Sulphate in 15 cc. of distilled water requires not more than 0.3 cc. of fiftieth-normal sulphuric acid for neutralization, using 1 drop of methyl red T. S. as indicator."

Creosoti Carbonas.—Specific gravity—"not below 1.150" instead of "1.145 to 1.170."

Test for Creosote altered.—After treating with Hydrochloric Acid and allowing to separate into two layers:

"Separate the creosote layer and wash it by shaking at first with 15 cc. of 20 per cent. aqueous solution of sodium chloride, then with 10 cc. of water and distil. Eighty-five per cent. of the creosote thus obtained, allowance being made for adhering moisture, distils between 200 and 220° C. The distillate, after separation of adhering water, does not respond to the test for *hydrocarbons* and *'coal tar creosote'* described under *Creosotum*."

Test for acid and free creosote changed.—"A one to five solution of the creosote in alcohol being used instead of a saturated solution, as in the present U. S. P."

Dextrosum (*d*-Glucose—Grape Sugar—Starch Sugar). $C_6H_{12}O_6$.—Dextrose is a white, crystalline powder or granular. It is odorless and has a sweet taste.

One Gm. of Dextrose dissolves in 1 cc. of water, and in about 40 cc. of alcohol at 25° C. It is more soluble in boiling water or in boiling alcohol.

Its aqueous solution (1 to 20) is neutral to litmus paper and is dextrorotatory.

The specific rotation $[\alpha]_D$ of Dextrose, determined at 25° C. in an aqueous solution containing in 100 cc., 10 Gm. of Dextrose, previously dried to constant weight at 105° C., and using a 200-mm. tube, is from + 52.3° to 52.8° (page —). The solution must be allowed to stand 24 hours before observing the rotation.

Add a few drops of the aqueous solution (1 in 20) to 5 cc. of hot alkaline cupric tartrate T. S. A copious red precipitate of cuprous oxide is formed (*difference from cane sugar.*)

Dried to constant weight at 105° C., it loses not more than 1 per cent. of its weight.

Ash: Not more than 0.1 per cent.

One Gm. of finely powdered Dextrose dissolves completely on boiling with 20 cc. of alcohol under a reflux condenser (*dextrin, milk sugar*).

On adding 1 drop of iodine T. S. to a solution of 1 Gm. of Dextrose in 10 cc. of distilled water, the liquid is colored yellow (*soluble starch, sulphite*).

The aqueous solution (1 in 20) does not respond to the test for heavy metals (page —).

Dissolve 1.5 Gm. of Dextrose in 5 cc. of distilled water, add 5 cc. of diluted sulphuric acid and 1 cc. of bromine water and heat for 5 minutes on a water-bath. Add 0.5 Gm. of potassium iodine, follow with 5 drops of stannous chloride T. S., cool and subject to the arsenic test (page —). The stain produced, if any, is not greater than that produced in a test made with the same quantities of reagents to which 2 cc. of the standard arsenic solution (page —) has been added.

Two-Gm. portions of Dextrose show no more chloride than corresponds to 0.5 cc. of fiftieth-normal hydrochloric acid, and no more sulphate than corresponds to 0.5 cc. of fiftieth-normal sulphuric acid.

Diacetylmorphinæ Hydrochloridum.—Solubility changed to—"One Gm. of Diacetylmorphine Hydrochloride dissolves in 2 cc. of water, in 13 cc. of alcohol, and in 2 cc. of chloroform at 25° C. It is almost insoluble in ether."

Test added.—"A solution of 0.5 Gm. of Diacetylmorphine Hydrochloride in 15 cc. of distilled water requires not more than 0.7 cc. of fiftieth-normal sodium hydroxide for neutralization, using one drop of methyl red T. S. as indicator (*free acid*)."

Dichloramina (Dichloramine-T. Paratoluenesulfonedichloramide). $C_6H_4(CH_3)(SO_2NCl_2)$.

It contains from 28 to 30 per cent. active chlorine.

Dichloramine T. occurs as pale yellow crystals or yellowish crystalline powder. It has an odor of chlorine, and gradually decomposes on exposure to air, losing chlorine.

Dichloramine T. is almost insoluble in water. It is soluble in eucalyptol and in chlorinated paraffin hydrocarbons, also in glacial acetic acid. One Gm. dissolves in about 1 cc. of benzene or chloroform and in about 2.5 cc. of carbon tetrachloride. It is decomposed by alcohol.

It melts at about 80° C.

On adding about 0.1 Gm. of Dichloramine T. to 5 cc. of an aqueous solution of sodium bromide (1 in 10) bromine is liberated (difference from *chloramine T.*).

Strong mineral acids added to Dichloramine T. liberate chlorine.

Add 1 cc. of sulphuric acid to 0.1 Gm. of Dichloramine T. Chlorine is evolved but no appreciable darkening occurs (*readily carbonizable substances*).

Assay.—Weigh accurately about 0.1 Gm. of Dichloramine T. in a dry glass-stoppered bottle, dissolve it in 20 cc. of glacial acetic acid, then add 10 cc. of potassium iodide T. S., dilute with 50 cc. of water, allow to stand for ten minutes and titrate the liberated iodine with tenth-normal sodium thiosulphate. Each cc. of tenth-normal sodium thiosulphate corresponds to 0.001873 Gm. of available chlorine.

Preserve in well-closed containers protected from light.

Epinephrina (Lævomethylaminoethanol Catechol). $C_9H_{13}O_3N$.—Epinephrine occurs as a white or light brownish, microcrystalline, odorless powder, gradually darkening on exposure to the air.

It is very slightly soluble in water or alcohol, insoluble in ether, chloroform, acetone and fixed or volatile oils.

Epinephrine combines with acids, forming salts which are readily soluble in water, and from these solutions the base may be precipitated by ammonia or alkali carbonates.

The acid solution is not affected by picric acid, tannic acid, phosphomolybdic acid, mercuric potassium iodide, or platinic chloride.

Its saturated aqueous solution is slightly alkaline to litmus paper.

A dilute (1:1000) slightly acid solution of Epinephrine gives an emerald-green color with ferric chloride T. S., turning to cherry-red and finally to brown on standing. Other oxidizing agents produce red, pink or violet colors which change to brown. Fixed alkali hydroxides cause the solution to darken on standing, but do not precipitate the Epinephrine.

Ash is negligible from 0.1 Gm.

Preserve in well-closed containers, protected from light.

Eugenol.—Statement of origin is omitted.

Fel Bovis.—No change.

Hypophysis Sicca.—No change.

Liquor Epinephrini Hydrochloridi.—A solution of epinephrine in water and hydrochloric acid, containing in each 1000 cc. not less than 0.95 Gm. nor more than 1.05 Gm. of epinephrine and 0.005 per cent. of HCl.

(The formula for the preparation of this solution and assay will be supplied by the Subcommittee on Liquors and Bio-assays, respectively.)

Solution of Epinephrine Chloride is a nearly colorless, slightly acid liquid, gradually turning dark on exposure to air and light. When the solution has become brown in color and contains a precipitate it must be rejected.

The addition of one drop of ferric chloride T. S. to 10 cc. of the solution produces an emerald-green color which soon turns to a cherry-red and finally to a brown. Other oxidizing agents produce red to pink or violet colors which change on standing. Fixed alkali hydroxides darken it, but do not precipitate the epinephrine.

Preserve in small, well-filled, amber-colored bottles.

Maltum.—Rubric changed to "The grain of one or more varieties of *Hordeum sativum* Jessen (Fam. *Gramineæ*) partially germinated artificially, and containing amylolytic enzymes. It converts not less than 5 times its weight of starch into sugars."

Assay changed to "Mix a quantity of potato starch, purified as directed under Pancreatinum, equivalent to 5 Gm. of dried starch, in a beaker with 10 cc. of cold, distilled water. Add 140 cc. of boiling distilled water and heat on a water-bath with constant stirring for two minutes, or until a translucent, uniform paste is obtained. Cool to 40° C. in a suitable bath previously adjusted to this temperature. Add 20 cc. of an infusion of Malt freshly prepared as described above and previously heated to 40° C. Mix well and maintain the same temperature for exactly thirty minutes, stirring frequently; a thin, nearly clear liquid is produced. Add at once 0.1 cc. of this liquid to a previously made mixture of 0.2 cc. of tenth-normal iodine and 60 cc. distilled water. No blue or reddish color is produced."

Mel.—Statement of origin changed to "A saccharin substance gathered mostly from the nectar of flowers, and deposited in the honey comb by the bee, *Apis Mellifera* Linné (Fam. *Apidæ*).

Optical activity statement changed to "Honey is lævorotatory at 20° C."

Tests for chloride and sulphate changed.—"Ten-cc. portions of an aqueous filtered solution of Honey (1 in 10) show no more chloride than 0.2 cc. of fiftieth-normal hydrochloric acid and no more sulphate than 0.2 fiftieth-normal sulphuric acid (see turbidimetric tests)."

Neoarsphenaminum (Novarsenobenzol, Neosalvarsan).—A product obtained by the action of sodium methanol sulphoxylate on arsphenamine, and consisting partially of sodium 3-diamino 4-dihydroxy arsenobenzene methanol sulphoxylate ($NH_2OH.C_6H_3As:SC6H_3.OH.NH-(CH_2O)OSNa$. It contains from 18 to 20 per cent. of arsenic (As), and it complies with the toxicity requirements, control and labeling regulations of the United States Public Health Service.

Neoarsphenamine is prepared for sale in sealed containers of colorless glass, from which the air has been excluded either by production of a vacuum or by displacement with a non-oxidizing gas.

Neoarsphenamine is a yellow powder. It is odorless or has a slight odor. In dry state or in solution it is readily oxidized by exposure to the air, becoming darker or more toxic. Higher temperatures accelerate the oxidation.

It is very soluble in water, soluble in glycerin, slightly soluble in alcohol and almost insoluble in chloroform or ether.

Its aqueous solution (1 in 20) is neutral to litmus paper (difference from arsphenamine).

An aqueous solution of Neoarsphenamine (1 in 100) is precipitated by diluted mineral acids (difference from arsphenamine) but yields no precipitate with solutions of alkali hydroxides or carbonates, and is not precipitated by mercuric potassium iodide T. S. (difference from arsphenamine).

The addition of two drops freshly prepared ferric chloride T. S. to 5 cc. of the aqueous solution (1 in 1000) produces a purple or purplish-red color changing to dark red.

On adding 3 cc. of silver nitrate T. S. to 5 cc. of the aqueous solution (1 in 100) a brown precipitate is immediately formed, rapidly becoming black (difference from arsphenamine).

To 10 cc. of an aqueous solution of Neoarsphenamine (1 in 100) add 10 cc. of diluted hydrochloric acid and heat. The odor of sulphur dioxide is perceptible.

The solution resulting from the assay yields with hydrogen sulphide a yellow precipitate soluble in ammonium carbonate T. S.

Add 5 cc. of distilled water to 0.5 Gm. of Neoarsphenamine in a test tube and gently agitate the mixture. A complete solution results in 5 minutes.

Assay.—Proceed as directed under *Arsphenaminum.*

Preserve in a cool place, preferably at a temperature not above 10° C.

Oleum Olivæ.—Test for peanut oil added—"Saponify 10 Gm. of Olive Oil by heating it under a reflux condenser with a solution of 4 Gm. of potassium hydroxide in 80 cc. of alcohol for one hour." Neutralize exactly with diluted acetic acid using phenolphthalein as indicator, and wash into 120 cc. of boiling lead acetate T. S. Boil the mixture for a minute, then cool by immersing the flask in cold water, occasionally rotating the contents to cause the precipitate to adhere to the sides of the flask. Decant the liquid and wash the precipitate with cold water to remove excess of lead acetate, then wash with 90 per cent. alcohol (by volume). Add 100 cc. of ether, cork well and allow to stand until the precipitate is disintegrated. Connect with a reflux condenser, boil for 5 minutes, then cool to about 15° C. and allow to stand over night. Filter and thoroughly wash the precipitate of lead soaps with ether. Wash the precipitate into a 500-cc. separator by means of a jet of ether, alternating at the end, if a little of the precipitate adheres to the filter paper, with diluted hydrochloric acid. Add enough diluted hydrochloric acid to make the total volume about 100 cc. and also enough ether to make its total volume about 100 cc. and shake vigorously for several minutes. Allow the layers to separate, run off the acid layer, and wash the ether once by shaking with 50 cc. of diluted hydrochloric acid and then with several portions of water until the water washings are no longer acid to methyl orange. Transfer the ether solution into a dry flask, evaporate off the ether, add a little dehydrated alcohol and evaporate on a steam-bath. Dissolve the dry fatty acids by warming with 50 cc. of 90 per cent. alcohol (by volume), slowly cool the solution to 15° C., shaking frequently to aid crystallization, and allow to stand at 15° C. for 30 minutes. No crystals separate (*peanut oil*).

Pancreatinum.—Added to rubric—"It converts not less than 25 times its weight of casein into proteoses."

Assay with milk omitted.

Assay for Casein Digesting Power added.—"*Assay for Casein Digestive Power.*

"Place 0.1 Gm. of finely powdered casein in a 50-cc. volumetric flask, add 30 cc. of distilled water and shake well to bring the casein to suspension. Add exactly 1 cc. of tenth-normal sodium hydroxide and heat the mixture at 40° C. until the casein is completely dissolved, which should not require more than 30 minutes. Cool, add sufficient water to make 50 cc. and mix well.

"Dissolve 0.1 Gm. of Pancreatin in 500 cc. of distilled water. Mix 1 cc. of glacial acetic acid with 9 cc. of water and 10 cc. of alcohol.

"Place 3 cc. of the casein solution in a test tube, add to it 2 cc. of the well-shaken Pancreatin solution and 3 cc. of water and mix by gentle agitation.

"Immediately immerse the test tube in a water-bath of 40° C. and keep it at this temperature for one hour. Then remove from the bath and add 3 drops of the acetic acid. No precipitate is produced."

Phenolsulphonephthaleinum (Sulphenthal—Phenol Red) $(C_6H_4OH)_2CO.C_6H_4SO_2$.—Sulphenthal is a crystalline powder, varying in color from bright to dark red. It is stable in the air.

One Gm. of Sulphenthal dissolves in about 1300 cc. of water, 350 cc. of alcohol, 500 cc. of acetone. It is almost insoluble in chloroform or ether.

It is readily soluble in solutions of alkali hydroxides and carbonates as well as in ammonia water or in solutions of ammonium carbonate with a color varying from deep red in concentrated to violet-tinted red in dilute solutions. The red color of the solution is changed to orange or yellow by a slight excess of acid. Its solution in alkali hydroxide is decolorized by warming with zinc dust.

Dried to constant weight at 110° C. Sulphenthal loses no more than 1 per cent. of its weight.

Ash: Not more than 0.2 per cent.

Fill a 100-cc. glass-stoppered flask with thoroughly boiled and cooled water to within a few cc. of the stopper. Add 1 cc. of an alcoholic solution of Sulphenthal (1 in 1000) and 0.5 cc. of fiftieth-normal sodium hydroxide, stopper immediately and mix well. A strong red color is produced (*sensitiveness*).

To about 1 Gm. of Sulphenthal accurately weighed, add a filtered solution of 0.5 Gm. of sodium bicarbonate in 20 cc. water. Rotate frequently during one hour, dilute to 100 cc. and let stand over night. Filter on counterbalanced filters or a Gooch crucible, wash at first with 25 cc. of 1 per cent. solution of sodium bicarbonate, then with 25 cc. of distilled water, and dry to constant weight at 110°. The weight of the insoluble residue does not exceed 0.2 per cent.

Heat a crucible to redness and introduce, in small portions, an intimate mixture of 0.2 Gm. of Sulphenthal, about 0.5 Gm. of potassium nitrate, and about 0.3 Gm. of anhydrous sodium carbonate. Maintain a red heat until the reaction ceases, then boil the cooled residue for five minutes with 10 cc. of diluted sulphuric acid, filter, and wash the undissolved residue with 10 cc. of distilled water. Evaporate the filtrate and washings until sulphuric acid vapors begin to evolve. The residue, dissolved in 5 cc. of distilled water, meets the requirements of the test for arsenic (page —).

Physostigminæ Salicylas.—The definition "The salicylate ($C_{15}H_{21}O_2N_3.C_7H_6O_3$) of an alkaloid obtained from physostigma" is omitted but the formula follows the title.

Quinidinæ Sulphas (Quinidine Sulphate). $(C_{20}H_{24}O_2N_2)_2.H_2SO_4 + 2H_2O$.—Quinidine Sulphate occurs in fine, needle-like, white crystals, frequently cohering in masses. It is odorless and has a very bitter taste. It darkens on exposure to light.

One Gm. of Quinidine Sulphate dissolves in about 90 cc. of water, 10 cc. of alcohol, at 25° C., in about 15 cc. of boiling water. It is soluble in chloroform but almost insoluble in ether.

The aqueous solution of Quinidine Sulphate (1 in 100) is neutral or slightly alkaline to litmus paper and is dextrorotatory. (Quinine Sulphate is lævorotatory.)

An aqueous solution of Quinidine Sulphate when acidulated with diluted sulphuric acid develops a vivid blue fluorescence. Add 1 or 2 drops of bromine T. S. to 5 cc. of an aqueous solution of the salt (1 in 1000) and follow with 1 cc. of ammonia water. The liquid acquires an emerald-green color.

To 5 cc. of a solution of Quinidine Sulphate (1 in 100) add 1 cc. of silver nitrate T. S. and stir the mixture with a glass rod. A white precipitate forms after a short interval (difference from *many other alkaloids*).

Barium Chloride produces in an aqueous solution of the salt a white precipitate which is insoluble in hydrochloric acid.

Dried to constant weight at 100° C., Quinidine Sulphate loses not more than 5 per cent. of its weight.

Ash not more than 0.1 per cent.

A solution of 0.1 Gm. of the salt in 2 cc. of sulphuric acid is not darker than light yellow (*readily carbonizable substances*).

One Gm. of Quinidine Sulphate dissolves in 5 cc. of a warm mixture of two volumes of chloroform and one volume of dehydrated alcohol with not more than a slight turbidity (*ammonium or other inorganic salts*).

Dissolve 0.5 Gm. of Quinidine Sulphate in 15 cc. of boiling water and add a solution of 0.5 Gm. of potassium iodide in 5 cc. of water which has previously been neutralized to litmus paper with tenth-normal sulphuric acid if necessary. Mix well, cool the mixture to 15° C. and keep it at this temperature for one hour with frequent agitation. A white precipitate is formed. Filter and add 2 drops of ammonia water to the filtrate. No turbidity is produced within one minute (*other cinchona alkaloids*).

Preserve in well-closed containers protected from light.

Quininæ Ethylcarbonas (Quinine Ethylcarbonate). Euquinine. $C_{20}H_{23}O_2N_2.CO_2.C_2H_5$.

Quinine Ethyl Carbonate occurs in white, fine, soft needles, usually matted together in fleecy masses. It is odorless and possesses no bitter taste, but when masticated it slowly develops a slightly bitter taste. It darkens on exposure to light.

Quinine Ethyl Carbonate is only slightly soluble in water. 1 Gm. dissolves in 2 cc. alcohol, 1 cc. of chloroform, about 10 cc. ether, at 25° C. It is readily soluble in diluted acids.

It melts between 89° and 91° C.

Its saturated aqueous solution is slightly alkaline to litmus paper.

Its solution in diluted sulphuric acid exhibits a blue fluorescence.

To 5 cc. of an aqueous solution of Quinine Ethyl Carbonate (1 in 1000) made with the aid of a slight excess of diluted sulphuric acid, add 2 or 3 drops of bromine T. S. and follow with one cc. of ammonia water. The liquid acquires a green color.

To about 0.2 Gm. of Quinine Ethyl Carbonate add 2 cc. of sodium hydroxide T. S. and 5 cc. of iodine T. S. and gently warm the mixture. The odor of iodoform is evolved.

When about 1 Gm. of Quinine Ethyl Carbonate is digested with 10 cc. of a 5 per cent. solution of potassium hydroxide in dehydrated alcohol a white precipitate is gradually formed which effervesces with acids.

Ash not more than 0.2 per cent.

Dried over sulphuric acid for 24 hours the loss in weight does not exceed 2 per cent.

Dissolve 0.3 Gm. of Quinine Ethyl Carbonate in 10 cc. of diluted nitric acid and 20 cc. water. Ten-cc. portions of this solution are not rendered turbid at once by the addition of a few drops of silver nitrate T. S. (*chloride*) or of barium chloride T. S. (*sulphate*).

Preserve protected from light.

Pyroxylinum.—No change.

Quininæ Hydrobromidum.—The statement of origin is omitted.

Morphine test omitted.

Test for ammonium salts added. "One Gm. of Quinine Hydrobromide dissolves in 5 cc. of a mixture of 2 volumes of chloroform and 1 volume of dehydrated alcohol with not more than a slight turbidity (*ammonium or other inorganic salts*)."

Test for sulphate replaced by turbidimetric test.

Test for other Cinchona alkaloids changed.—"Dissolve about 3 Gm. of Quinine Hydrobromide in 80 cc. warm water in a separator, add 10 cc. ammonia water, shake out the mixture successively with 30 and 20 cc. of chloroform, and evaporate the chloroform solution to dryness on the water-bath. Dissolve 1.5 Gm. of this residue in 25 cc. of alcohol, dilute the solution with 50 cc. of hot water, add normal sulphuric acid (about 5 cc.) until the solution is acid, using 2 drops of methyl red T. S. as indicator, then neutralize the excess of acid with normal sodium hydroxide. Evaporate the liquid to dryness on a water-bath, powder the residue, mix it in a test tube with 20 cc. of distilled water and complete the test for other cinchona alkaloids as described under Quinine Sulphas."

Quininæ Tannas.—Test for uncombined Quinine changed.—One Gm. of salt is directed and the residue should not exceed 1 per cent.

Sapo.—No change in description or tests but the synonym changed to "White Olive Oil-Castile Soap."

Sulphonmethanum.—No change.

Terebenum.—The definition "A liquid consisting of dipentene and other hydrocarbons, obtained by the action of concentrated sulphuric acid on oil of turpentine" is replaced by "A mixture of terpene hydrocarbons, chiefly dipentene and terpinene, obtained from Oil of Turpentine."

Thyroidum.—No change.

Thyroxinum (Thyroxin).—Triiodo oxyindol beta-propionic acid $(C_8H_5ONI_3).C_2H_4COOH$.

The active principle of the thyroid gland. It contains not less than 63 per cent. of iodine.

Thyroxin occurs as white or slightly yellow, needle-like, odorless crystals or powder.

Thyroxin is insoluble in water and practically insoluble in alcohol or other usual organic solvents, but in the presence of mineral acids it dissolves in alcohol. It is soluble in solutions of alkali hydroxides and when the alkaline solutions are saturated with sodium chloride the sodium salt of thyroxin separates.

Ignite a few milligrams of Thyroxin with about 0.1 Gm. of sodium carbonate, dissolve the

residue in 2 cc. of water, acidulate with acetic acid, add 1 cc. of chloroform and a few drops of chlorine water. The chloroform acquires a violet color.

Ash from 0.01 Gm. is negligible.

Dry about 0.02 Gm. of Thyroxin over sulphuric acid for 24 hours. The loss in weight is negligible.

Shake 0.01 Gm. of Thyroxin with 10 cc. of water during 5 minutes and filter. Acidulate the filtrate with one drop of diluted nitric acid and add 3 drops of tenth-normal silver nitrate. The turbidity so produced is not greater than that produced in a control test by one drop of fiftieth-normal hydrochloric acid (*soluble iodides*).

Assay.—Weigh accurately about 0.02 Gm. of Thyroxin previously dried over sulphuric acid for 24 hours. Mix it with about 0.5 Gm. of anhydrous potassium carbonate in a small platinum crucible, cover the mixture with an additional 1 Gm. of anhydrous potassium carbonate and heat gradually until it is completely decomposed. Treat with water and transfer into 100-cc. graduated flask. Heat the solution on the water-bath and add potassium permanganate solution (1 in 20) drop by drop until the liquid remains pink. Then add drop by drop just enough alcohol to discharge the pink color, cool, dilute to the mark with boiled out, distilled water. Mix well and filter through a dry filter into a dry flask, rejecting the first 20 cc. of the filtrate. To 50 cc. of the filtrate add about 0.5 Gm. potassium iodide and 30 cc. of diluted sulphuric acid and titrate the liberated iodine with two-hundredth normal sodium thiosulphate using starch T. S. as indicator towards the end. Correct for any iodine liberated in a blank made with the same quantities of water, sulphuric acid, and potassium iodide. Each cc. of two-hundredth normal sodium thiosulphate corresponds to 0.01058 milligram of iodine.

CORRESPONDENCE

CORRESPONDENCE RELATING TO RESOLUTIONS OF THE HOUSE OF DELEGATES A. PH. A.

Secretary William B. Day has received replies to his communications from the Departments of the Federal Government. The following refer to Resolutions Nos. 16 and 24, which read:

16. *Resolved*, That the House of Delegates of the A. Ph. A. request the heads of those departments of the Federal Government having jurisdiction and supervision of matters relating to pharmaceutical practice to employ one or more registered pharmacists in each and every such department.

24. WHEREAS, It has come to our ears that the Medical Department of the Army, the U. S. Public Health Service and The General Supply Committee of the Treasury Department have eliminated the metric system from their specifications for the purchase of medical supplies, and

WHEREAS, There exists good reason to believe that the Navy Department and the Veterans Bureau are considering doing likewise,

Be It Resolved, That this House of Delegates of the American Pharmaceutical Association considers the elimination of the metric system for the purchase of supplies as a distinct backward step. This House of Delegates also wishes to express the sincere hope that the use of the metric system will be continued in the hospitals and other institutions under the supervision of the three departments mentioned above.

Be It Furthermore Resolved, That the Navy Department and the Veterans Bureau be requested to continue the use of the metric system for the purchase of medical supplies.

Resolved, That the Secretary of the House of Delegates is hereby directed to send copies of these resolutions to each of the respective departments mentioned.

ACTING SURGEON GENERAL M. J. WHITE.—I am in receipt of your letter of November 6, 1923, quoting a resolution of the House of Delegates of the American Pharmaceutical Association relative to the employment of registered pharmacists in the departments of the Federal Government having jurisdiction and supervision of matters relating to pharmaceutical practice, and bearing upon the use of other standard measures than those of the metric system in the purchase of medical supplies.

It is routine practice in the Public Health Service to constantly employ registered pharmacists who are also officers of the Public Health Service in all establishments where matters relating to pharmaceutical practice are handled. There is such a pharmacist in the Hospital Division Bureau of the Public Health Service, two at the Hygienic Laboratory, Washington, D. C., and one detailed with the Bureau of Supply, Washington, D. C.

In the interest of economy, it has been found desirable to discontinue for the present the use of the metric system in taking proposals for the purchase of certain classes of supplies. The Association of Drug Manufacturers made this request, representing that containers conforming to the apothecaries' and avoirdupois measures are in common use and that containers conforming to the metric system are not in common use, and that the average manufacturer is therefore unable to bid on supplies in terms of the metric system, and is thereby placed at a great disadvantage, the cost to the Government of the supplies being also increased. I am constrained to believe, therefore, that for the present it will not be advisable to discontinue the present methods of purchase, although I have taken the matter up with the Office of the Director of Supply and have ascertained that any bidder may offer proposals in terms of the metric system if he so desires and that due consideration will be given to all such bids.

WASHINGTON, NOVEMBER 15, 1923

DAN C. VAUGHAN, DIRECTOR OF SUPPLY.—In reply to your letter of November 7, directing my attention to a resolution passed by the House of Delegates of the American Pharmaceutical Association, you are informed that the General Supply Committee, since its inception, has had the benefit of the services of one or more registered pharmacists in making awards on drugs, chemicals and pharmaceutical preparations.

WASHINGTON, NOVEMBER 9, 1923.

FRANK T. HINES, DIRECTOR U. S. VETERANS BUREAU.—Receipt is acknowledged of your letter of November 7th, transmitting certain resolutions adopted by the House of Delegates of the American Pharmaceutical Association at its annual meeting held at Asheville, N. C.

You are informed that the U. S. Veterans Bureau has a registered pharmacist employed in each of its hospitals and, where necessary, in its dispensaries.

In the interest of economy, and in order to adhere to commercial practices, the apothecaries' and avoirdupois systems of weights and measures were adopted by the Veterans Bureau to be used in connection with the purchase of drugs and medicines. This action was taken following similar action by the U. S. Public Health Service and the U. S. Army.

This Bureau will continue to use the metric system in specifying chemicals and reagents.

WASHINGTON, NOVEMBER 16, 1923.

Relating to "A New World Survey of Pharmacy," the following communication has been received from the Bureau of Foreign and Domestic Commerce.—John F. Kelley.

In reply you are advised that this Division recently published Trade Information Bulletin No. 149, "Markets for American Pharmaceutical, Medicinal, and Biological Preparations." This bulletin discusses in a very general way the foreign markets for American medicinals. There is now in the hands of the printer a bulletin which will take up in detail all phases of marketing American pharmaceuticals and medicinals in Brazil, and it is anticipated that from time to time similar publications on the more important countries of the world will be published by this Bureau. It appears to me, therefore, that the necessary action to meet the sentiments of the resolution adopted at your meeting has already been undertaken.

I am inclosing a copy of Trade Information Bulletin No. 149, and I shall be glad to send you such number of copies as you may desire of our Brazilian Bulletin as soon as it comes off the press.

NOVEMBER 10, 1923.

THE SECTIONS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

ABSTRACTS OF MINUTES OF THE SESSIONS HELD IN ASHEVILLE, N. C., SEPTEMBER 3–8, 1923.

SCIENTIFIC SECTION.

The first session of the Scientific Section A. Ph. A. was convened at 9:00 A.M., September 5, by Chairman Arno Viehoever. Vice-Chairman Paul S. Pittenger presided during the reading of the Chairman's address.

CHAIRMAN'S ADDRESS.

We have before us a greatly varied program of many interesting papers to be presented by experts in their respective lines. Your officers feel deeply gratified over the support received in making this program possible.

MEMBERSHIP OF SECTION.

The Section has grown beyond expectation within recent years. I believe it to be a wise plan for the incoming officers to continue to solicit the support of all those workers—be they pharmacologists, physiologists, biologists, chemists, botanists, etc.—who are interested in or, preferably, actively engaged in scientific work of benefit to pharmacy.

We have thus far succeeded in bringing together at these meetings representatives of educational institutions, of some manufacturing interests (we should have many more) and of delegates of the Federal Government exclusive, I regret to say, of the Army and Navy. There are with us, no doubt, scientifically inclined pharmacists, but few, if any, representatives from State and City laboratories. Neither have we, since Mr. Wilbert's death, obtained much support from hospital pharmacists.

STATUS OF PHARMACEUTICAL RESEARCH ACTIVITIES OF THE SCIENTIFIC SECTION.

The present status of pharmaceutical research in this country is not altogether clear. It is believed that a list of research workers, indicating also the nature of their work in contemplation or recently completed, would be a very helpful census and a useful guide for further work. The writer has been asked, as Secretary of the National Conference of Research, to prepare such a list and will welcome any coöperation that you care to give him.

The Scientific Section is at present directly represented on the National Conference of Pharmaceutical Research, on the National Research Council (Committee on Botany and Pharmacognosy), on the A. Ph. A. Research Committee. Your Chairman is glad to report that the coöperative work, consisting of recording and stimulating pharmaceutical research by all possible means, is carried out in a real harmonious spirit and progress is being made.

The Scientific Section, comprising in its membership most of the active research workers of this country in pharmacy, may well assume a leading rôle in stimulating more thorough training of pharmacy students and special training of workers in special pharmaceutical fields, and in encouraging research work in the whole profession.

INTEREST IN POSTGRADUATE STUDENTS.

In order to stimulate research among a larger number of postgraduate students your Chairman should like to see some of the funds available for research work distributed in prizes among the contestants for solving yearly a specific problem, suggested by the Scientific Section and approved by the National Conference on Pharmaceutical Research. Among the problems, which seem to the writer worthy of study, the following may be mentioned in a suggestive way, *e. g.*, Capillary analysis and its application to the examination of drugs; a critical study of recent methods (1) for the determinination of moisture in drugs, or (2) for the determination of volatile oil, or of alkaloids for drugs such as hydrastis, or others.

EBERT PRIZE AND OTHER RESEARCH FUNDS.

With the large increase in yearly contributions to the Scientific Section, representing work in the varied fields of pharmacology, biochemistry, pharmaceutical chemistry, pharmacognosy, botany, etc., it becomes increasingly difficult to select one contribution for award of the Ebert

Prize on the basis of outstanding merit. If the rules of the Ebert Prize Committee should not permit of the award of the prize to the one who best solves a given problem, selected as suggested above, then the following procedure, suggested also by the present Chairman of the Ebert Prize Committee for consideration, may be feasible: A rotation may be made, choosing for consideration one year contributions on pharmacology, another year those on chemistry, and so forth, covering in this manner the work in the four subdivisions of the Scientific Section in four years. If this plan should appear impracticable, certain rules might be worked out by the Section to be approved by the Research Committee and to serve as a guide to the Ebert Prize Committee.

It would seem highly desirable that in all colleges of pharmacy funds be made available for research in pharmacy and related sciences. The Scientific Section may well go on record in supporting any movement aiming to bring this about.

GOVERNMENT DRUG CHEMISTS.

Outside of a few of the larger cities, such as New York and Cleveland, no control or only inadequate control of drug supplies is exercised by municipal governments. The same is true to a smaller degree with respect to State governments. The amount of drug research now carried on in the Federal Government, including the Army and Navy, could very well be extended.

It requires no argument to convince the thinking citizen that the trade in such important commodities as drugs needs the most careful supervision, and that research must be a necessary companion to the regulatory work. The training of pharmacists, as it is done in our best schools of pharmacy, eminently fits graduates for work of this character.

The Scientific Section could therefore, I feel, properly urge more scientific training for the student who cares to go into such service; encourage the movement for increased drug control and research by municipal, State and Federal governments, and recommend the employment of pharmacists who have the training and ability qualifying them for such positions.

HOSPITAL PHARMACISTS.

We should be equally interested in the scientific training of the prospective hospital pharmacist, so that he in turn can accomplish work of a high scientific order.*

According to a recent survey the number of dispensaries is reported to already exceed 4000. The dispensing should, of course, be in the hands of well-trained pharmacists, preferably those scientifically inclined. I hope the Scientific Section may, through its suggestions, be instrumental in bringing about a better training and the adoption of higher standards for hospital pharmacists.

COMMITTEE ON QUALITY OF MEDICINAL PRODUCTS.

In connection with the work of the Committee on Quality of Medicinal Products, the suggestion may be in place that the function of only recording the condition of drugs found in trade be extended to one aiming at the direct correction of unsatisfactory conditions. Coöperation should be sought with committees representing trade organizations, including manufacturers, representatives of educational institutions, Government Bureaus and of wholesale dealers located both in the growing districts and in the manufacturing districts. Much could be learned in the reorganization of such a committee from the working plan of the Committee on Guaranteed Reagents and Standard Apparatus, appointed by the American Chemical Society; Mr. W. D. Collins, U. S. Geological Survey, Washington, D. C., serves as the Chairman of this Committee.

PLANT SCIENCE SEMINAR.

The twenty and more men who came recently to the Plant Science Seminar in Minneapolis for joint labor with members of the Plant Science Group organized there were practically all members of the Scientific Section. The work accomplished at Minneapolis and the stimulus received in the one week conference and work demonstrated clearly what may be accomplished even by comparatively few workers, for scientific progress. I should like to urge, therefore, all other pharmaceutical workers, especially the members of this Section, to support this seminar and other similar seminars which I hope will be organized.

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* Following this part of the address a letter from a hospital pharmacist was introduced. He spoke of conditions in hospital pharmacies and advocated higher education for pharmacists.

HONORARY MEMBERS.

It has been the custom of the Scientific Section to suggest the names of foremost pharmacists in the world for election as Honorary Members of the A. Ph. A. Your Chairman proposes the following for consideration: John Uri Lloyd, the eminent pharmacist of Cincinnati; Henry S. Wellcome, the genial American manufacturer in London; Richard Wasicky, M.D., Ph.D., the successful Director of the Pharmacognostic Institute at Vienna, Austria.

SUMMARY.

It is urged that the Section give its fullest coöperation to the Secretary (Viehoever) of the National Conference of Pharmaceutical Research in his work on the census of research work and workers.

It is recommended that the Section assist the movement for increased study by postgraduate students.

Research funds should be made available in all colleges and the Association should be requested to make some of its funds available annually for competitive work on certain problems of pharmaceutical interest. These should be selected by the Scientific Section and approved by the National Conference of Pharmaceutical Research.

The problem of awarding the Ebert prize on the basis of outstanding value has become real in view of the large number of contributions now submitted to the Scientific and other sections. If the prize cannot be given to the author submitting the best solution of a selected problem, it is suggested that it be awarded in rotation to papers discussing problems of the four subdivisions of the Section, or to work out rules to be approved by the A. Ph. A. Research Committee that may guide the Ebert Prize Committee in its work.

It is urged that the Section support the movement to place properly qualified pharmacists in drug and food laboratories of municipal, State and Federal governments, including the Army and Navy.

It is recommended that the Section encourage a survey of the status of employees dispensing medicines in hospitals and clinics and bring about a more general demand for the appointment of specially trained pharmacists.

It is suggested that the Committee on the Quality of Medicinal Products change its function from a recording activity to one attempting to adjust the conditions found unsatisfactory, and, in order to attain this end, seek the active coöperation of the trade representatives and trade organizations directly interested, as well as the Government.

It is recommended that the Section give all possible support to the Plant Science Seminar movement, and other similar seminars which may be organized.

It is proposed that the Section take under consideration the election of honorary members.

On motion duly seconded and carried the address was referred to a Committee. The Acting Chairman appointed F. W. Nitardy chairman of the committee; members, E. E. Stanford and J. P. Snyder.

The report of the Committee was made at the last session of the Scientific Section but for convenience is placed here:

REPORT OF COMMITTEE ON CHAIRMAN'S ADDRESS.

Your Committee has given careful consideration to the splendid address of our Chairman and especially given thought to the various recommendations contained therein and it desires to repeat that it is in full accord with the following:

1. It is urged that the Section give its fullest coöperation to the Secretary of the National Conference of Pharmaceutical Research in his work on the census of research work and workers.

2. It is recommended that the Section assist the movement for increased study by graduate students.

Research funds should be made available in all colleges and the Association should be requested to make some of its funds available annually for competitive work on certain problems of pharmaceutical interest. These should be selected by the Scientific Section and approved by the National Conference of Pharmaceutical Research.

The Committee states that funds of the Association are of course now available and suggests that this recommendation might be referred to the Board of Directors for further consideration.

3. It is urged that the Section support the movement to place qualified pharmacists in drug and food laboratories of city, State and Federal governments.

4. It is recommended that the Section encourage a survey of the status of employees dispensing medicines in hospitals and clinics and bring about a more general demand for the appointment of specially trained pharmacists.

5. It is suggested that the Committee on the Quality of Medicinal Products change its function from a recording activity to one attempting to adjust the conditions found unsatisfactory and, in order to attain this end, seek the active coöperation of trade representatives and trade organizations directly interested as well as the Government.

6. It is recommended that the Section give all possible support to the plant science seminar movement and other similar seminars which may be organized.

7. It is proposed that the Section take under consideration the election as honorary members of the A. Ph. A. of Messrs. John Uri Lloyd of Cincinnati, Henry S. Wellcome of London, England, and R. Wasicky of Vienna, Austria.

In this connection the Committee believes that the question of electing regular members of the Association as honorary members should be submitted to the Board of Directors for consideration.

The Chairman makes a further recommendation which concerns the award of the Ebert Prize. This reads as follows:

8. "The problem of awarding the Ebert Prize on this basis of outstanding value has become real in view of the large number of contributions now submitted to the Scientific Section. If the prize cannot be given to the best solution of a selected problem, it is suggested to choose in rotation papers discussing problems of the four subdivisions of the Section or to work out rules to be approved by the Research Committee, that may guide the Ebert Prize Committee in its work."

Your Committee believes that it is not within the power of the Association to change the conditions under which the Prize is awarded and which were laid down by Dr. Ebert in establishing the Prize Fund. Your Committee believes, however, that much assistance could be given the Ebert Prize Committee by adopting the following suggestions and it respectfully submits them to your consideration:

a. Appoint the Ebert Prize Committee at the first Section meeting of the convention, preferably from members in attendance at the convention, so that the committee may have the opportunity to make notes during the reading of papers and discussions, which will be of aid in connection with the work of the committee.

b. Request authors to furnish in duplicate all papers read before this Section as well as the Section on Practical Pharmacy and Dispensing, so that one copy may be transmitted to the Chairman of the Prize Committee for use of that committee, thereby obviating the necessity of waiting for publication of papers before the committee can start its work.

Respectfully submitted,
(Signed) J. P. SNYDER,
E. E. STANFORD,
F. W. NITARDY, *Chairman*.

At the last meeting of the Scientific Section, it regularly moved, seconded and carried that the Committee on Research review the plan of the Ebert Prize and report to the Scientific Section next year.

(Signed) J. P. SNYDER, *Secretary*.

Chairman F. W. Nitardy brought the matter relating to the Ebert Prize before the House of Delegates. See p. 1018, November JOURNAL—the item of expense and election of honorary members was referred to the Board of Directors, and research matter was referred to the Committee on Research.

Chairman Viehoever appointed the Committee on Nominations.

PAPERS.[1]

The following papers were presented and discussed. Some have been printed in October, November and December issues of the JOURNAL; others will appear in succeeding numbers; discussions will accompany them.

[1] The following papers of the Scientific Section were printed in the October JOURNAL: "Standardized Colored Fluids and Some U. S. P. Tests," by H. V. Arny; "The Preparation of

Pharmacology and Biological Assay: "Morphology and Pharmacology of Chaparro Amargosa" (discussion of pharmacological data), by Albert Schneider; "Composition of a Few Alleged Tuberculosis Cures," by L. F. Kebler; "Standardization of Gelsemium," by Paul S. Pittenger; "Pneumococcus Antibody Solutions," by Paul S. Pittenger; "Report on Biological Assays" (detailed statement), by Paul S. Pittenger; "Standardization and Stabilization of Aconite," by E. E. Swanson; "Antispasmodic Action of Chloretone," by S. W. Rowe; "The Pharmacodynamics of Caapi," by H. H. Rusby; "Preliminary Studies," by Thomas S. Githens; "Aboriginal Uses," by H. H. Rusby; "The Chemical Examination of Caapi," by Harvey A. Seil and Earl B. Putt; "Recent Investigations on Antiluetic Drugs—Progress in Salvarsan Therapy," by H. B. Corbitt and C. N. Myers; "Action of Certain Chemical Agents on the Sterility and Activity of Tissue Extracts," by Wyle McG. Billings; "Colloidal Silver Antiseptics," by P. M. Giesy and R. B. Smith.

Biological Chemistry: "Concerning Characteristic Odors of Fish and Other Aquatic Organisms," by John Thomas Lloyd; "Commercial Sources of Cantharidin," by Arno Viehoever; "Suprarenin (Synthetic Epinephrin)," by Casimir Funk, H. E. Dubin and Louis Freedman; "Diethylphthalate," Paper No. II, by J. A. Handy and L. F. Hoyt; "Progress in Vitamine Research," by Casimir Funk and H. E. Dubin.

Chairman Viehoever introduced Professor Francis P. Venable, former head of the University of North Carolina, author of a number of textbooks, an ex-president of the American Chemical Society, who delivered an address on "Radio-Activity, Its Discovery, Nature and Some of Its Revelations."

At the outset the lecturer sought to impress upon his hearers the urgent call for investigation in their branch of science. The essentials for successful work in any investigation were pointed out, namely, a thorough knowledge of all work which had been done already or which in any way bore upon the object of the investigation and such practice in the methods to be used as would enable the investigator to make progress. Success depended upon the careful observation and record of every change. No detail, even the minutest, should be overlooked. Skill in manipulation was demanded and unwearying patience often called for. In searching for truth care must be taken that the results obtained were truly facts even though that might entail much repetition. A logical thinking out of underlying causes was necessary and often difficult. It was along this line that many mistakes had been made.

In illustration of these points the discovery of radioactivity was described step by step from the making of the Crookes' tubes, the work of Röntgen, of Becquerel, Madame Curie and Debierne. The story of the clearing up of misunderstandings, the correction of false ideas and theories was told until the one possessed of the proper training, the power of logical thinking and the clear vision with Nature's secrets was found in Rutherford who by his disintegration theory made all clear and paved the way for our present knowledge of the atom and its nature.

There was a general response expressing appreciation of the address by Professor Venable and a rising vote of thanks was extended.

JOINT SESSION OF THE SCIENTIFIC SECTION AND SECTION ON PRACTICAL PHARMACY AND DISPENSING.

The joint session of the Scientific Section and Section on Practical Pharmacy and Dispensing was convened by Chairman Arno Viehoever of the Scientific Section, Thursday, September 6, at 8:00 P.M. The first number of the program was an illustrated address by H. H. Rusby on "The Aboriginal Uses of Caapi."

Acid-Fast Caramel," by G. D. Beal and Gladys Applegate; "Electrometric Assay Methods for Crude Drugs," by W. J. McGill and L. R. Wagener; "The Titration of Ferric Chloride with Sodium Hydroxide Using the Oxygen Electrode: a Proof of the Non-Existence of Iron Oxychloride," by R. B. Smith and P. M. Giesy; "Rapid Method for the Determination of Total Phosphorus in Phosphorus Paste," by T. J. Austin. The November issue has the following: "Suprarenin (Synthetic Epinephrin)," by Casimir Funk, H. E. Dubin and Louis Freedman; "The Alkalinity of Magma Magnesiae as Determined by the Hydrogen Electrode," by R. B. Smith and P. M. Giesy; "The Standardization and Stabilization of Aconite Preparations," by E. E. Swanson and A. L. Walters; "A Study of the Relative Preservative Values of Glycerin and Sugar Solutions in Certain Official Preparations," by John C. Krantz, Jr.

THE ABORIGINAL USES OF CAAPI.

It was explained that the film used to illustrate the lecture was loaned by the Amazon Film Company and entitled "The Land of No Regrets." It is intended to portray life among the aborigines of Southeastern Colombia and the photographs were taken by Mr. Gordon MacCreagh of New York, photographer of the Company. The lecturer spoke in part as follows:

"One of the important factors in the life of these savages is the ceremony of caapi drinking, which is embraced in this presentation, and for which the latter is made. The use of caapi is based upon the native belief that all tribal misfortunes or impending dangers are the work of a personal devil and that these dangers can be escaped and the injuries remedied only through the exorcising of this spirit. This exorcising, they believe, must be effected through the exhibition of great virtue, which virtue, with them, takes the form of courageously facing danger and patiently enduring suffering. This action must be a voluntary one and is usually in the form of an ordeal by torture. In order to impart the necessary courage and fortitude, the caapi is drunk.

"A paper read before the Scientific Section gives a brief account of the symptoms and results produced by the administration of this drug.

"Ordinarily, the first step in preparing to meet one of the disasters referred to above is that of submitting the matter to the medicine-man, who advises whether a council meeting should or should not be called. If the former decision is reached, the inhabitants of the surrounding villages are summoned by the use of a huge signal drum, made by hollowing out an immense tree-trunk, and the tones of which can be heard for several miles. The council meeting is preceded and accompanied by formal dances and other ceremonies, in which both men and women participate. If the council so decides, the ceremony of caapi drinking is resorted to. For this occasion, the men of the tribe gather and seat themselves in two rows, the individuals facing one another, but no woman is allowed to participate or even to witness the ceremony. Formerly, the penalty for violating this law was death—but I do not know whether this extreme severity still persists.

"The caapi may be prepared by only one individual in the tribe, and only certain specified officials are permitted to offer it to the drinkers. Under the influence of the beverage, a war-like spirit is developed in the men, who recount their various exploits in battle, or when subject to other dangers. As their courage increases, one after another will volunteer to undergo the ordeal. When a sufficient number have thus volunteered, they retire to some remote portion of the forest, where the torture is inflicted. This ceremony takes place by night, but was performed in the daytime for Mr. MacCreagh in order that he might secure his pictures. The dance that accompanies it is known as the 'dance of the owls and frogs,' probably because the cries of these animals are heard during its performance. The men, stripped for the occasion, are supplied with musical instruments in the form of huge gourds which are used as wind instruments. The tune is a monotonous one, but is very accurate as to time, pitch and quality of notes. After the dance has continued for some time, one of the participants will hand to a companion a cruel whip made of the tough splints from a palm leaf, which imparts an intensely painful stroke. He then turns his back while his companion lashes him. It is required that he continue to play his instrument without the loss of a note or any variation in time or tone, and without flinching or manifesting any other sign of suffering. Should he fail to do so, it is a sign that, so far as he is concerned, the evil spirit wins and the efforts to exorcise it will fail. Having successfully endured the scourging he then takes the whip from his companion, who must in turn receive a blow inflicted by himself. This ceremony continues for a considerable time, until every man has been repeatedly scourged, and until his entire body is covered with welts or bloody marks. As the operation is continued, and the men's sufferings increase in severity, there is a steadily increasing tendency for each to return the other's blow with interest, so that the suffering inflicted before the close of the ceremony often becomes extremely severe. If all goes well, the men then return to the council and report a successful result."

A vote of thanks was extended to Doctor Rusby.

SYMPOSIUM ON U. S. P. AND N. F. REVISION.

Chairman Viehoever announced as the next part of the program a symposium on U. S. P. and N. F. Revision, and Chairman Robert J. Ruth of the Section on Practical Pharmacy and Dispensing assumed the gavel.

Chairman E. Fullerton Cook, of the U. S. P. Revision Committee, presented his report in abstract, and was followed by Chairman W. L. Scoville, of the Committee on Revision of the

National Formulary. Sub-chairmen George M. Beringer, Theodore J. Bradley, E. L. Newcomb, W. L. Scoville, H. A. B. Dunning, Charles H. LaWall and A. G. DuMez presented brief abstracts of their reports or submitted them by title for publication.

E. L. Newcomb stated that Chairman J. H. Beal, of the Board of Trustees U. S. P., had quite a number of samples of different products which had been used in revision work, and that these were available for pharmacists who desired to work on revision problems.

H. V. Arny presented a paper in abstract on "Standardized Colored Fluids and Some Official Colorimetric Tests." (See October JOURNAL, pp. 839–849.)

This paper was followed by a stunt show including the following numbers, here submitted in abstract through courtesy of Chairman Viehoever.

STUNT SHOW.

"Porcelain Writing Ink," by B. B. Wright.—Five per cent. solutions of borax and cobalt nitrate are mixed. The writing with this liquid, shaken up before use, is carried out in the usual way with an ordinary pen upon the hot crucible, heated to about 300° C.—U. S. Bureau of Chemistry.

"Melting Point Apparatus," by R. W. Hale.—The author uses a distillation flask of about 150 cm. with its arm bent upward in a rectangular manner. This flask is filled to $^2/_3$ capacity with the heating liquid. A test-tube is inserted in the flask and liquid. A thermometer and the capillary tube with substance are inserted as usual in the test-tube, which is heated by the liquid partly surrounding it, thus eliminating the need of a stirrer.—U. S. Bureau of Chemistry.

"Device of Soxhlet Extraction Apparatus," by S. Palkin.—A simple device for adjusting the syphoning column of the Soxhlet Extraction Apparatus is described and illustrated by a diagram.

The use of the device affords the following advantages: The volume of liquid in the syphoning reservoir is made variable and dependent upon the amount of material to be extracted.

The frequency of syphoning is increased so that in general the speed of extraction is materially increased.

For small samples a flask sufficiently small can be fitted to the apparatus and the residue may be weighed directly.

"Micromelting Point Apparatus," by J. F. Clevenger and Arno Viehoever.—The apparatus permits the determination of the melting point of minute quantities of crystalline substances under the microscope. The heat is supplied by electric currents, controlled by rheostat and measured by a thermometer.—U. S. Bureau of Chemistry, Washington, D. C.

"Sedimentation-Tube," by Arno Viehoever.—The tube, consisting of 2 parts of the sizes desired, permits of ready separation of sediments in liquids of specifically heavier impurities (sand) in drugs and should prove of wide application.—U. S. Bureau of Chemistry, Washington.

"Apparatus for the Precipitation of Barium Sulphate," by A. G. Murray.—The device described is intended to facilitate the quantitative precipitation of barium sulphate by affording a convenient automatic means of delivering hot barium chloride solution by drops into a boiling sulphate solution.—U. S. Bureau of Chemistry, Washington, D. C.

"A Scrubber for Ammonia Distillates," by A. G. Murray.—A scrubber for ammonia distillates has been devised which is essentially the Davisson scrubber with the addition of a device for automatically returning to the distilling flask the excess condensate in the trap.—U. S. Bureau of Chemistry, Washington, D. C.

"Sublimation Flask," by Arno Viehoever.—The flask constructed out of Pyrex glass permits of the ready sublimation of crystalline substances from crude material, drugs and plant or animal products. The sublimate obtained under controlled conditions of temperature and pressure may be received on cooled condenser.—U. S. Bureau of Chemistry, Washington, D. C.

"An Automatic 'Non-Breaking' Syphon," by E. O. Eaton.—The author describes an apparatus in a single unit, which will start a syphon without the use of mechanical suction, and which will not "break" as the level of the short arm is reached. Its use in the syphoning of corrosive and poisonous liquids as well as in certain types of percolations and filtrations where a constant level is to be maintained is emphasized.—U. S. Bureau of Chemistry, San Francisco.

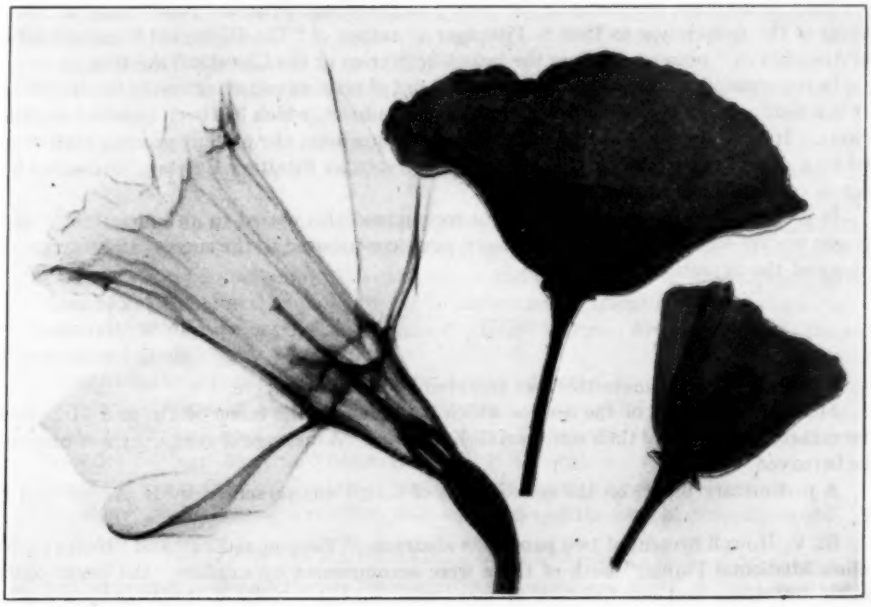
The show ended after midnight, when rats were injected with improperly alkalinized solutions of salvarsan by Dr. Corbitt, who demonstrated the striking results to a tired but patient and appreciative group.

THIRD SESSION.

The third session of the Scientific Section A. Ph. A. was called to order by Chairman Viehoever at 9:00 A.M. He introduced Dr. John D. MacRae, well-known radiologist of Asheville, who spoke briefly on X-ray applied to plants. A number of slides were shown which gave evidence that the method may find more extended application and usefulness.[1]

X-RAY STUDY OF PLANTS AND THEIR PARTS.

Dr. MacRae explained that "it is possible to make radiographs of flowers just as it is of different parts of the human body, and such radiographs are capable of demonstrating flower anatomy as the human anatomy is demonstrated." "Hall Edwards," he said, "suggested its usefulness in botany and published a radiograph of tulips in the *Archives of the Roentgen Ray*, June 1914. Dr. Wheeler P. Davey refers to it in some "Interesting Applications of the Cooledge Tube in *X-Ray Studies*," put out by the Research Laboratory of the General Electric Company, in 1919. Dr. MacRae was pleased to have the invitation to show the slides and present the



X-ray photographs of flowers: In the one on the left ovules may be seen in the ovary; in the other two, stamens and pistils are plainly visible.

subject, because only few know about the X-raying of flowers; with him it is a diversion and he has found much pleasure in the work. He submitted the photographs and slides hoping that the brief remarks in connection therewith might stimulate an interest and result in more extended application of X-ray in the study of plants. Among other slides, one of a jonquil and another of a California poppy were shown. In the former the ovules may be seen in the ovary, and in the poppy the stamens and pistils are plainly visible.

The presentation was followed by a discussion in which Dr. MacRae, E. L. Newcomb, Caswell A Mayo, William Mansfield, I. A. Becker, Arno Viehoever and others participated.

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[1] H. Rieder, in *Umschau* in 1916, described the method of making X-ray photographs of plants and their parts. He pointed out that great differences exist between the different parts of the plant with respect to their content of mineral ash and consequently with respect to their power of absorption for Roentgen rays. The more delicate details of plant tissues are, of course, not revealed as in the microscope; the processes of nutrition and the fertilization of plants can however be studied. The *Scientific American* of 1919 gave some attention to the subject; both of the articles referred to were illustrated.—EDITOR.

E. L. Newcomb had done some work along the suggested lines and felt that there were great possibilities in further studies. A question was asked relative to the cost of an X-ray outfit for such work and answered by the statement that this would be about $750.

A rising vote of thanks was extended Dr. MacRae.

A paper on "Natural Plant Coloring Matters" was presented in abstract by the author, John H. Wurdack.[1]

"A Review of the Literature of Pharmacy and Pharmaceutical Botany," by Heber W. Youngken, was submitted by title.

"Mexican Cactus—A Substitute for Cactus," and "An Adulterant of Queen of the Meadow" were presented by O. A. Farwell and discussed by Messrs. Newcomb, Mansfield, Pittenger, Viehoever and others.

The report of the Committee on Ebert Prize was submitted.

REPORT OF COMMITTEE ON EBERT PRIZE.

Your Committee recommends the award of the Ebert Prize for papers read at the 1922 meetings of the Association to Paul S. Pittenger as author of "The Biological Standardization of Local Anesthetics," presented before the Scientific Section at the Cleveland meeting.

In recommending this award it may not be out of place to call attention to the fact that this paper is a continuation of distinguished work on this subject, which has been reported at previous meetings. It may also be said that this author's claims upon the present year's award are reinforced by a second paper entitled "Isolated Uterus Assay for Pituitary Extract," presented by the author in collaboration with Arnold Ouici.

It is a pleasure to this Committee to recommend this award to an indefatigable and enthusiastic worker whose labors have for many years contributed to the success and interest of the meetings of the Scientific Section.

C. J. ZUFALL,
F. W. NITARDY,
E. E. STANFORD.

The report of the Committee was accepted by unanimous vote.

Mention was made of the sorrow which had come to the home of Dr. and Mrs. Edward Kremers through the loss of their son, Carl G. Kremers.[2] A message of sympathy was transmitted to the bereaved.

A preliminary report on the constituents of Caapi was presented by H. A. Seil and E. B. Putt.

E. V. Howell presented two papers, in abstract—"Yaupon as Tea" and "Notes on North Carolina Medicinal Plants;" both of these were accompanied by exhibits; the latter consisted of about 400 drugs and one hundred or more were carded. Both of these exhibits were very interesting and instructive, and added much to the value of the meeting, for no other section of the country yields as many medicinal drugs.

A rising vote of thanks was given Professor Howell for his interesting presentation.

The Committee on Nominations—Hermann Engelhardt, Chairman, W. H. Zeigler and F. E. Bibbins—reported the following nominees: *Chairman*, J. P. Snyder, New York; *First Vice-Chairman*, F. F. Berg, Maryland; *Second Vice-Chairman*, J. A. Goode, North Carolina; *Secretary*, Paul S. Pittenger; *Delegate to the House of Delegates*, E. V. Howell, North Carolina. The nominees were elected.

The report of the Committee on the Chairman's Address was read. After discussion by Messrs. Arny, Nitardy, Mansfield, Dohme, Snyder, Viehoever and others the action, previously reported, was taken. See following Chairman's address, preceding pages.

In commenting on the paper by J. C. Krantz, Jr.,[3] W. L. Scoville said that this was a type of work that should be encouraged; the problem of creating greater permanence of preparations is an important one.

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[1] Very brief reference was made on p. 838 to the paper; printing must be deferred to a later issue.

[2] See p. 825, September JOURNAL A. PH. A.

[3] See November JOURNAL A. PH. A., pp. 963–971.

The order of the program was changed by request of the Chairman and an illustrated lecture on "Distillation of Essential Oils in the United States" was presented by E. V. Kyser.

The remaining papers, which were not read, were offered by title and are as follows:

"An Improved Method for the Assay of Mercurial Ointment U. S. P., and Blue Ointment U. S. P." by D. M. Copley.

"Rapid Method for the Determination of Total Phosphorus in Phosphorus Paste,"[1] by T. J. Austin.

"The Preparation of Acid-fast Caramel,"[2] by G. D. Beal and Gladys Applegate.

"Preparation of Sucrose Caramel," by G. D. Beal and E. R. Littmann.

"Composition of Some Mixtures for Making Alleged Genuine European Wines," by L. F. Kebler.

"The Effect of Fatty Acids on Liniments and Emulsions," by E. V. Kyser and Franck C. Vilbrandt.

"The Titration of Ferric Chloride with Sodium Hydroxide Using the Oxygen Electrode: a Proof of the Non-Existence of Iron Oxychloride,"[3] by R. B. Smith and P. M. Giesy.

"The Alkalinity of Magma Magnesiae as Determined by the Hydrogen Electrode,"[4] by R. B. Smith and P. M. Giesy.

"Notes on Amyl Nitrite," by L. F. Kebler and W. F. Kunke.

"U. S. P. Syrup of Wild Cherry. Note on Variability of Composition," by L. F. Kebler and W. F. Kunke.

"Genuine Cassia Oil and Synthetic Substitutes," by C. A. Herrmann.

"Arseno-Tungstic Acid as an Alkaloidal Reagent," by George D. Beal and Edwin R. Littman.

"A Preliminary Examination of an Oil of Kaempferia," by F. Bischoff and Edward Kremers.

"Data on Catnip Oil from Cultivated Material," by A. O. Beath and Edward Kremers.

"Pharmaceutical Bibliography. A Suggestion and an Illustration," by Edward Kremers.

"Studies in the Genus Mentha," by G. C. Jenison and Roland E. Kremers.

Titles were also read of reports and papers of which Chairman Arno Viehoever is the author or co-author, as follows:

"Commercial Sources of Cantharidin," by Arno Viehoever.

"Commercial Types of Mace," by L. J. Schwarz and Arno Viehoever.

"Mexican Drugs," by J. F. Clevenger and Arno Viehoever.

"Selective Sifting," by Arno Viehoever and L. J. Schwarz.

"Report of Committee on Quality of Medicinal Products," by Arno Viehoever.

The officers of the Section were then duly installed and the final session adjourned.

SECTION ON EDUCATION AND LEGISLATION.

The first session of the Section on Education and Legislation, A. Ph. A., was called to order at 9:00 A.M., Thursday, September 6, by Chairman W. F. Gidley, who asked that the program be changed so as to have a discussion on the paper by Caswell A. Mayo on "Shall We Have a National Law Standardizing Clinical Thermometers?" The author of the paper spoke in part as follows:

"At the Kansas City meeting of the American Pharmaceutical Association, I presented a report on Clinical Thermometers in the United States. This report was based on an examination of about a hundred clinical thermometers gathered in different sections, and these were examined by the United States Bureau of Standards. This examination showed a wide variation in the degree accuracy of these thermometers, and the need of more careful supervision. As a result of this paper a conference was arranged for in New York where we met with Mr. Bartlett of the Bureau of Standards, and there discussed the situation. One result of that was a decided improvement in clinical thermometers. Five years later I presented a report showing that there was an improvement in the better class of thermometers, but there was still a difference in the thermometers sold on a price basis by the manufacturer who bought low-grade tubes. Since then Massachusetts and Connecticut have enacted laws providing for State approval of clinical thermometers that are offered for sale.

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[1] October JOURNAL A. PH. A., p. 857; [2] October, p. 850; [3] October, p. 855; [4] November, p. 955.

"The pharmacists of Ohio have discussed the advisability of enacting a law, but I dissented on the ground that a multiplication of State laws would, undoubtedly, lead to very serious complications. This situation, it seemed to me, could best be met by enacting a national law covering clinical thermometers, placing the administration of that law, so far as the fixing of standards is concerned, with the Bureau of Standards. This national law would be modeled along the lines of the National Food and Drugs Act, and obviate the possibility of having complications which would result by having numerous State laws.

"I have a draft of such a law, and also an abstract of the work which has been done by the Bureau of Standards in the direction of the standardization of clinical thermometers from the time that has elapsed since my first paper was presented in Kansas City. I would ask that a committee be appointed by the Chairman with instructions to publish this draft of the national law and inviting criticisms thereon in an endeavor to get it into shape for adoption, probably, at the next annual meeting of this Association. Our experience in the drafting of the anti-narcotic act, and of the model pharmacy law to be presented this year, shows that it is desirable to make haste slowly in such matters as this. It is better to delay enactment for a year or two than have it become necessary to amend it very soon."

Mr. Mayo moved that a committee be appointed to prepare and publish a draft proposing a national law, invite criticism, and present a revised form of that law at the next annual meeting of the American Pharmaceutical Association.

Mr. Philip, in seconding Mr. Mayo's motion, admitted the need of the regulation, but contended that there was too much national legislation. Mr. Wetterstroem said that this presented an opportunity for publicity by the House of Delegates. The question was called for and the motion was carried.

Chairman Gidley explained that the paper by Mr. Mayo had been presented because the author could not be present at a later session. Secretary G. A. Bergy presided during the reading of the Chairman's address.

CHAIRMAN'S ADDRESS.

It seems that it has been the custom of the Chairman of this Section to make an annual report based largely on data received from boards of pharmacy and schools of pharmacy dealing with progress along educational and legislative lines, while at the same time the Secretary of this Section also reported from similar data.

Your Chairman has left such reporting on new pharmacy laws, new prerequisite educational requirements, advanced entrance requirements, and the like to your Secretary.

For the greater part of the time you are invited to spend in our Section, you will enjoy and be edified by the excellent papers which have been so generously contributed. I wish to thank all such contributors at this time and to acknowledge the acumen and untiring energy which your Secretary has shown in attempting to make the Section on Education and Legislation a success.

In the brief time which I shall address you I wish to recall to your minds some of the efforts now being made to improve pharmacy in educational and legislative directions and to earnestly solicit your ideas and your full and hearty coöperation that such auspicious beginnings may in the end prove signal achievements.

Let it be understood that we are not forgetting the heroic efforts and hard won triumphs of those who have served pharmacy in the past.

It is taken for granted that your presence and my presence here at these meetings indicates an inner urge on our part to realize a personal feeling of greater power through an interchange of ideas. It is our ability to estimate value and to convert these ideas into action policy which is to give us prestige as educators or pharmacists. That is, the motive power of our activity has its origin in the vision which we as individuals hold worthy of realization. And this future picture cannot but reflect the limitations and quality of our vision.

That the minimum of perverted ideas be eased down from these glorious mountains let us have free and frank discussion of our papers.

As the Pill-rolling Philosopher puts it, "a lighted candle hidden beneath a tin percolator sheds no useful light and quickly dissipates itself in the heat of its own combustion."

The two-fold character which pharmacy is assuming is apparent to all. During the last thirty years these characters have constantly taken more definite shape. If these changing con-

ditions are to be adjusted and molded into a more efficient, more highly respected pharmacy all the ingenuity, thought and constructive ability of the leading minds in pharmacy will be required. You are all familiar with these facts.

The pharmacy schools, ever on the alert to attempt to supply the type of artisan demanded, have revised and rechanged their cataloged courses until these have become veritable kaleidoscopic pictures reflecting the existing unsettled conditions.

Standards of education have been and are being debated; entrance requirements are under close scrutiny; until, as someone has said, pharmaceutical education is in a ferment.

Such meetings as we are now having at Asheville should serve us, in some small measure at least, by pointing out how we may secure the valuable products of this fermentation process.

An immense amount of toleration and serious contemplation of the views of others is in order.

Educationally, three things are to be considered; what the goal is, what the steps are, and the time requirement for accomplishing the desired end. It is not my intention to try to offer a solution for these problems should I perchance possess one.

Perhaps one should say what the goals *are*, because, be it remembered, pharmacy has a two-fold character, one of a commercial nature with its maximum of merchandising and departmentizing; the other of a professional character with its maximum of the scientific and the technical.

It would seem that the plausible thing for the pharmacy student of the future to do would be to specialize in one or the other of those fields. But this training must not be merely a "limited perspective and unsympathetic education and unenlightened skill." Rather, as Newton D. Baker, Ex-Secretary of War, puts it. "if you give them contact with liberal and enlightening things and if you give them sympathies of a broad and general character, if you infect them with the consciousness of the fact that they are citizens and have great duties in that regard, and if you underlay all those faculties with a broad ethical and moral basis, showing that character, after all, is the rock upon which both success and usefulness must be established, then pharmaceutical education will assume and maintain the same dignity in the great collection of educational faculties which are sought for and attained by other sciences."

Human experience verifies the fact that if you take a boy out after two years of high school work and set him at a new branch of mental or technical development before he has accomplished something, the moral effect is bad on the boy. One's responsibility becomes very great for so doing.

It is said that letters are sent to eighth-grade students by mercenary business colleges asking "Why study more? Go into business and make money."

Not long since representatives of the organized department stores of the country appeared in Washington to protest against the 10% consumption tax on proprietary preparations, and their argument was that such a tax would subject them to a severe handicap for the reason that they employed clerks so deficient in intelligence that difficulty would be experienced in estimating the tax and selecting the proper stamp. A system less complicated was asked for.

Contrast these with the following compilation by Clyde Eddy in the *Druggists Circular:* "Beginning in July 1923, the forty-five colleges of pharmacy now holding membership in the American Conference of Pharmaceutical Faculties will admit only high school graduates to their courses and, after 1925, a minimum course of three years of collegiate study will be required for graduation. Also, beginning in July 1923, the National Association of Boards of Pharmacy, including practically every pharmacy board in the United States, will put into effect a uniform requirement admitting only high school graduates to their examinations. Fifteen states now require both high school and college graduation, and others will have similar requirements within a few years. And this is but the beginning. Pharmacy is rapidly taking its place among the professions, and it is conceivable that the pharmacist of but a few years hence will be on the same professional footing as his medical confrere." Who shall say that pharmacy is not making progress?

Speaking on the four-year high school minimum entrance requirement for the study of pharmacy after July 1923 for schools holding membership in the American Conference of Pharmaceutical Faculties, President C. H. LaWall, of the American Conference, and Dean of the Philadelphia College of Pharmacy and Science, says in the December issue of the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, "This step must be taken at the time agreed upon. It

should have been taken years ago. To delay it longer would be to make pharmacy a subject for laughter and sympathy, and we want neither."

It is support of just such matters that demands the full and unqualified coöperation of every live pharmacist who has the true interests of pharmacy at heart. Having agreed upon principles to be followed let us stick to the policy agreed upon. "Self-interest," continues Dr. LaWall," is disguised in many ways and expediency often replaces principles as a guide to action. There is always a minority that will not or cannot go along."

Other educational and legislative matters of great importance to the welfare of pharmacy are being projected and ask your allegiance and your best thought.

A proper classification of schools of pharmacy in the United States is highly desirable. One State after another is adopting prerequisite pharmacy legislation and their boards of pharmacy are forced to grope in the dark when they face the problem of recognition of the schools teaching pharmacy. A "recognized" school may mean at one time one "approved" by a particular board of pharmacy or, again, one holding membership in the American Conference of Pharmaceutical Faculties. Different boards may approve different schools within the same or different States. A uniform graduation should be at their disposal.

At this Asheville meeting Dr. W. W. Charters, of the Personnel Department of the Carnegie Institute of Technology, is to present a plan to investigate pharmaceutical education from the functional standpoint. A "consummation devoutly to be wished." I would not oppose the National Association of Boards of Pharmacy should they decide that the hour of opportunity was at hand for them to do another true service to pharmacy. There is real necessity that *some* stable organization undertake such a work and that we all give aid unreservedly.

A committee, headed by F. H. Freericks, has prepared a "Model for a Modern Pharmacy Law." Not perfect, but what a splendid effort to supply a crying need! It is printed in the journals of pharmacy. Read it, discuss it, submit your ideas to any member of the committee.

A "Model State Narcotic Law" has been evolved but was soon found to be deficient. But the theory is excellent. Progress and honest efforts are indissolubly linked together.

Who has a trenchant idea on the obtuse question of the value of "practical experience?" Now is the accepted time to ink it into sunlight.

Over thirty years ago Doctor Smart, then president of Purdue University, in an address before the Labor Commission of the United States, said "The old-fashioned and somewhat effective system has gone, and nothing adequate to the demand has come to take its place. The latter 'picking-up' process results in what a loss of time, money, and sometimes of morals. . . . While it is possibly profitable for the employer, it is not the most profitable method for the boys." Remember this observation was made over thirty years ago.

It is over twenty years ago that the speaker served two years of pharmacy "apprenticeship" before going to college. He has watched the "system" in operation since. It is often true that the college does not replace the counter in every relation in which practical experience is essential. Certain relations have a high disciplinary and economic value—unless perchance they breed habits of idleness and carelessness. So much depends upon the employer.

A past president of the American Conference of Pharmaceutical Faculties, speaking on the two or four years' "practical experience" requirement, said "Why we should compel a young man to spend, as a minimum, two years in college and the same length of time in a retail store before permitting him to register is beyond comprehension. Quite naturally such a requirement is not a very pleasing prospect to a young man contemplating the study of pharmacy."

Another former president of the same Conference speaking on the same subject said, "the way it works out is to crush the spirit out of a man, who has any spirit, and leaves in pharmacy a lot of corpses."

The present secretary-treasurer of the American Conference of Pharmaceutical Faculties, Professor Zada Cooper, suggested that *practical experience* might be a live subject for a symposium in the Section on Education and Legislation this year. Your Chairman was not sufficiently courageous to attempt a bath in such a fountain of trouble. But that is not saying that such a symposium would not prove an advantage in the end.

Next we have the zealous workers attempting to guarantee to pharmacy full legal protection of its prerogatives. Witness the work of Drs. Jacob Diner, Wardle, Lent, and others who won a victory for the New York Pharmaceutical Association by securing a new law in that State limit-

ing ownership of drug stores to registered pharmacists. Now objectionable owners can be put out of business simply by revoking their professional license. Lucky New York Board of Pharmacy! They can now protect pharmacy and public health by preventing non-pharmacists from opening "drug stores" simply for the purpose of obtaining a permit to withdraw alcohol and intoxicating liquor.

Trade journals, with their tremendous influence, gave whole-hearted support to this achievement. They have, moreover, given this same support to pharmaceutical education in general and with the warm approval of business interests. Big Business has recognized that the educated man possesses a dollar and cents advantage over his less fortunate brother who may have an equal amount of native ability but is handicapped in its application. This could be illustrated in countless recitals.

We wish again to endorse before this Section, as we did last year, the suggestions given four years ago by Professor Spease that the president of the Association appoint a committee of one to control the distribution of papers among our Sections. Undoubtedly, papers are read in certain Sections which properly belong in quite a different Section.

In conclusion the Chairman wishes again to convey his sincere thanks to all those who have made the program of this year possible.

On motion duly seconded and carried the address was referred to a committee consisting of Zada M. Cooper, M. N. Ford and W. J. Teeters.

The address was discussed by Messrs. H. L. Meredith, C. W. Johnson, H. V. Arny, G. A. Bergy, Otto P. M. Canis, C. A. Mayo, William Mansfield, and others.

H. L. Meredith spoke on the progress relating to entrance requirements and referred to the proceedings of the National Association of Boards of Pharmacy and American Conference of Pharmaceutical Faculties. (See pp. 926–928 and 1028–1031, JOURNAL A. PH. A.)

C. W. Johnson deplored that arithmetic was not taught in high schools, but to students at an age when they did not comprehend the subject.

H. V. Arny said that in the present high school system two years were wasted.

G. A. Bergy spoke of a class of about 450 students to whom two simple problems in arithmetic were given; out of that number 21 only were successful in the solution of both. One of the problems stated the cost of twelve oranges to be 45 cents and that of one orange was asked for. These young men are now in the university, and he contended that it was rather difficult to understand how men of that type would make a success in the drug business.

Mr. Meredith said that colleges of pharmacy had an opportunity to improve the condition, but improvement will not come unless the matter is brought to the attention of educational departments.

Mr. Philip said that the alumni of colleges should interest themselves in educational work in their respective communities. The opportunity should be given high school students to become acquainted with work in pharmacies.

Otto P. M. Canis said that there was not only deficiency in arithmetic but also in geography, in high school teaching. The point is, the teachers are developed along the same lines as those who are taught by them. "As citizens, if not as pharmacists, it is our duty to correct the present system of education," he said.

Mr. Mayo said the fault was that boys and girls are not taught how to study.

The Chairman was reminded of a common practice—when the school piano used in the upper grades no longer serves the purpose it is transferred for primary instruction; in this way the young receive mis-education in music. He said that the universities of Indiana now check up high schools—when a student fails, or makes a low mark, it is reported, and several such charges result in investigation and graduates of these schools may be denied admittance to universities. It costs money to educate boys and girls and educational boards consider failure a waste of money; this is bringing about improved conditions all along the line.

William Mansfield said that the important thing was to instill an interest in students in the subjects taught; one that is considered dry becomes most interesting matter under the instruction of another teacher.

THE SECRETARY'S REPORT.

The next order of business was the Secretary's report. Secretary Bergy presented the report in detail, but stated that some of the tabulations were incomplete; a few of the schools had not

reported. (The greater part of the Secretary's report is tabulated matter and could not be completed in time for this issue and will be printed in a succeeding number of the JOURNAL.) The report was referred to the Committee on Chairman's Address, and a vote of thanks was extended.

Chairman Gidley stated that the papers by A. R. Bliss, Jr., and George Bachman on "Physiology and Pharmacodynamics in Colleges of Pharmacy" and that by L. E. Sayre on "Practice of Pharmacy and Dispensing" had not been received.

A committee on nominations was appointed consisting of C. A. Dye, W. B. Philip and M. N. Ford. On motion a recess was taken until Friday, September 7.

SECOND SESSION.

The adjourned session of the Section on Education and Legislation was reconvened at 1:30 P.M., September 7, by Chairman W. F. Gidley. Report of the Committee on Nominations was called for. Chairman Dye reported the following nominations: *Chairman*, G. A. Bergy of West Virginia; *Secretary*, William Mansfield, New York; *Associates*—J. G. Beard, North Carolina; M. N. Ford, Ohio; J. B. Burt, Nebraska; *Delegate to the House of Delegates*, H. L. Meredith, Maryland. On motion duly seconded and a vote the nominees were unanimously elected. The first session was then adjourned and the second session convened.

Chairman Zada M. Cooper reported for the Committee on Chairman's Address and Secretary's Report. There were no recommendations, but the Committee commended the officers for their reports which would serve as guides and valuable references; a vote of thanks and appreciation was offered.

A paper by Mariano del Rosario, Director of the School of Pharmacy, Manila, was read and referred for publication. A paper by Joseph Jacobs on "A New World Survey of Pharmacy" was referred to the House of Delegates. (See p. 1011, November JOURNAL A. PH. A.)

Authors of other contributions of the program were not present; these were to be presented verbally; hence no action could be taken. There being no further business a motion to adjourn was carried.

(*To be continued.*)

COMMITTEE REPORTS

REPORT OF SUB-COMMITTEE NO. 15—NOMENCLATURE.*

The Sub-Committee on Nomenclature of the U. S. P. Revision Committee began its work shortly after the adjourment of the U. S. P. Convention held in Washington in May 1920, and has been active ever since. At the time this report was written, it had practically completed a review of all of the titles, abbreviations and synonyms of the items admitted from the U. S. P. IX and the first vote on proposed titles for newly admitted items was in the act of being taken.

Up to the present time about 225 deletions, additions or alterations in titles have been decided upon and recommended to the Revision Committee for adoption. A list of these changes has been compiled and copies thereof placed at your disposal. It is obvious that the time is too short for me to discuss with you here all of the changes which the Sub-Committee has recommended or to give the reasons therefor, but I do believe that the time is ample and that the matter is of sufficient importance to bring to your attention the recommendations which have been adversely criticized by the members of the General Committee, and, if time permits, one or two additional topics upon which I would like to secure your opinions.

It must be evident to everyone present that a committee of seven persons cannot be aware of all the conditions which make a title desirable or undesirable, no matter how diligently its members may work among themselves. It is only by soliciting aid from the "outsiders" that the committee can hope to become informed on all of the various factors which should be taken into consideration in the selection, deletion or alteration of a title. I sincerely hope, therefore, that you will let me have the benefit which may accrue from a free and thorough discussion of the titles in question.

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* Scientific Section, A. Ph. A., Asheville meeting, 1923.

Antipyrina. The Committee has recommended that the title "Antipyrine" be retained. A member of the General Committee has suggested that the name be charged to "Phenazone," the official title in the British Pharmacopœia. The reason given for this suggestion is that antipyrine is a trade name and we would secure Anglo-Saxon uniformity by adopting the British title.

Gossypium Purificatum. The Committee has recommended that the foregoing title be retained. A member of the General Committee has suggested that "Purificatum" be dropped and that the title be made "Gossypium."

Magnesii Oxidum Ponderosum. The Committee has recommended that this title be retained. It has been suggested by a member of the General Committee that "Ponderosum" be deleted.

Sulphur Sublimatum. The Committee has recommended that this title be retained. It has been suggested by a member of the General Committee that "Sublimatum" be deleted and that the title be made "Sulphur."

Talcum Purificatum. The Committee has recommended that this title be retained. It has been suggested by a member of the General Committee that "Purificatum" be dropped and that the title be made "Talcum."

Terra Silicea Purificata. The Committee has recommended that this title be retained. It has been suggested by a member of the General Committee that "Purificata" be dropped and that the title be made "Terra Silicea."

Acetanilidum. The Committee has recommended that a final "e" be added to the English title. This recommendation was made to bring the title into conformity with that adopted by the American Chemical Society. Opposition to this change has been expressed by at least two members of the General Committee.

Acetphenetidinum. The Committee has recommended that the English title be changed to "Acetophenetide" to bring it into conformity with that adopted by the American Chemical Society. Opposition to this change has been voiced by several members of the General Committee. The statement is made that this change may lead to confusion. It has been further stated that the medical and pharmaceutical professions have been accustomed to "Acetphenetidin" for two decades and that it is doubted whether the scientific considerations which have led to the recommendation of this change are sufficient to outweigh established usage. Attention is also called to the fact that the abbreviation "Acetophen" may be confused with that for "Acetophenone."

Acidum Phenylcinchoninicum. The Committee has recommended that the foregoing title be changed to "Cinchophenum" because of the fact that the physician rarely, if ever, uses the longer title. He is usually led to prescribe this drug under one of the trade names. It was thought that this condition might be corrected by the adoption of the title "Cinchophen" which is the one recognized by the American Medical Association. Objection to this change has been voiced because it is thought that the new title suggests "Cinchona" and that the "um" ending allies it with a class of U. S. P. substances which are not closely related to it. Further objection is raised to the adoption of this title because it is a Latinized trade name.

Antimonii et Potassii Tartras. The Committee has recommended that this title be changed to "*Antimonylis et Potassii Tartras.*" This change was made because it was thought that the latter title would be more accurate and conform more generally to modern usage. Objection has been raised to this change on the ground that the old title is shorter and probably just about as correct from a chemical standpoint.

Aqua Ammoniæ and Aqua Ammoniæia Fortior. The Committee has recommended that these titles be changed to "Liquor Ammonii Hydroxide" and "Liquor Ammonii Hydroxidi Fortior." This recommendation was made because these preparations seem to be out of place among the waters of the Pharmacopœia which in all instances are very dilute solutions of organic substances. The designation "Hydroxide" was selected because reagent bottles are usually labelled "Ammonium Hydroxide." It is possible that "Liquor Ammoniæ" would have been a better selection. Objection has been raised to this change in title on the ground that this is really a solution of ammonia gas in water, only a small portion of the ammonia combining to form ammonium hydroxide. The change is further objected to on the ground that this preparation conforms to the definition for waters.

Caffeinæ Sodio-Benzoas. The Committee has recommended that this title be changed to "Caffeina cum Sodii Benzoate." This recommendation was made because of the fact that this is not a definite chemical compound, but a mixture of caffeine with sodium benzoate. The Caffeine can be shaken out with chloroform. Greater accuracy in describing this substance was what impelled the Committee to make the change.

Theobrominæ Sodio-Salicylas. The Committee has recommended that this title be changed to "Theobrominæ Sodium cum Sodii Salicylate." This change was made for reasons similar to those given under the preceding title. In both cases the present U. S. P. titles indicate that the hyphenated portion is acid in character, that is, for example, that the caffeine compound is a sodiobenzoate salt of caffeine. The new titles conform to those given in the Netherlands Pharmacopœia. Objection has been raised to these changes on the ground that the new titles are longer and that the old ones are now well established by usage.

Chloral Hydratum. The Committee has recommended that this title be changed to "Chloral Hydras" to bring it into conformity with the title official in the British Pharmacopœia. The question has been asked if anything will be gained by this change.

Eucalyptol. The Committee has recommended that this title be changed to "Cineol" because of the fact that chemists prefer the name "Cineol" and because much of the material now on the market is not obtained from the oil of eucalyptus, but is prepared synthetically. The fact was also taken into consideration that this compound is not only a constituent of oil of eucalyptus, but also of other volatile oils.

Hexamethylenamina. The Committee has recommended that this title be changed to "Hexamina." This recommendation has been made because of the fact that physicians will not use the longer title, but prescribe this compound under one of the various trade names instead. The Committee was further influenced by the fact that "Hexamina" is the title given in the British Pharmacopœia.

Liquor Hydrogenii Dioxidi. The Committee has recommended that this title be changed to "Liquor Hydrogenii Peroxidi" because it was thought that the latter title is more extensively used and is the title official in the British Pharmacopœia.

Saccharum and Saccharum Lactis. The Committee has recommended that these titles be changed to "Sucrose" and "Lactose," respectively, because these terms are coming into general use among chemists for specifying these products. Furthermore, the title would be much shorter in the case of "Saccharum Lactis." Objections to these changes are raised on the ground that the old titles have been established by long usage.

Serum Antitetanicum. The Committee has recommended that this title be changed to "Antitoxinum Tetanicum Naturale" and that the purified product be changed to "Antitoxinum Tetanicum." These changes were made to bring the titles into conformity with those used by the Government and because the purified product is really not a serum. It is the serum from which as much as possible of the non-active material has been removed. Objection is raised to this change on the ground that the purified product is neither unnatural nor artificial.

Sodii Boras. The Committee has recommended that this title be changed to "Sodii Tetraboras" because the latter is more in keeping with chemical usage. Objection has been raised to this change on the ground that the older title is shorter and well established.

Virus Vaccinicum. The Committee has recommended that this title be changed to "Vaccinum Variolæ" (smallpox vaccine). This change was made on the recommendation of the Committee on Biologics. It is said to be the title most generally used. Objection has been raised to this change on the ground that the older title is etymologically more harmonious than smallpox vaccine and appears to be generally accepted.

Oleoresina Aspidii. The Committee has recommended the deletion of the synonym "Oleoresin of Male Fern." It has been suggested by a member of the General Committee that this synonym be retained.

Oleum Anisi. The Committee has recommended that one of the English titles for this item be "Oil of Star Anise." It is suggested by a member of the General Committee that "Oil of Star Anise" is not a suitable synonym for "Anise Oil" since the two are not identical. It is further suggested that if "Star Anise Oil" is to be made official as well as oil of anise, then the plant of star anise should be included in the text of "Oil of Anise."

Benzosulphinidum and Sodii Benzosulphinidum. The Committee has recommended that

the titles for these compounds be changed to "Glusidum" and "Glusidum Soluble." This recommendation was made because physicians as a general rule refuse to use the present titles and employ instead one of the trade names. "Glusidum" and "Glusidum Solubile" are not only shorter, but they are the official British titles for these substances. The Committee gave consideration to the adoption of the titles "Saccharin," but was influenced against it by the arguments advanced by the Bureau of Chemistry.

Hydrargyri Salicylas. The Committee has recommended that this title be changed to "Hydrargyrum Salicylatum" because it is not a true salicylate nor strictly a basic salicylate. It has been suggested by a member of the General Committee that the title "Hydrargyrum Salicylatum" would indicate that the product is a mixture and not a chemical compound. This would be the meaning inferred in view of the use in the U. S. P. of such titles as "Citrate of Caffeine." "Benzoinated Lard," *et cetera.*

Plumbi Oxidum. The Committee has recommended that this title be retained. It has been suggested by a member of the General Committee that since there are several oxides of lead and one of these oxides, namely Pb_3O_4, is used medicinally and is official in the National Formulary, it might be advisable to make the title "Plumbi Monoxidum."

Alœ. The Committee has recommended that the English title be "Alœs." Attention has been called by a member of the General Committee to the fact that the Latin title is singular, the English is plural, and the substance is a juice. It is further stated that this is the last of the plural titles in the U. S. P. except "Folia." It is suggested that the English titles be made "alœ."

Balsamum Tolutanum. The Committee has recommended that this title be retained. In making this recommendation the Committee was influenced by the fact that the substance is very generally known as "Balsam of Tolu." The present U. S. P. titles for the tincture and the syrup were retained as it would be necessary to lengthen these titles considerably if the term balsam was to be included. The fact that the title "Balsamum Tolutanum" is inconsistent with "Tinctura Tolutana" and "Syrupus Tolutanus" has been called attention to by a member of the General Committee. This member recommends that the title be changed to "Tolu." He further states that association with "Balsamum Peruvianum" is not important since there are no official preparations of "Peru Balsam."

Belladonnæ Folia. The Committee has recommended that this title be retained. It has been suggested by a member of the General Committee that the singular, "Folium," be used since it does not appear to be any more necessary to say leaves than roots or seeds. Furthermore, the International Protocol uses the singular for leaf drugs, *e. g.*, "Digitalis Folium."

Cascara Sagrada. The Committee has recommended that this title be changed to "Rhamnus Purshiana" because "Cascara Sagrada" is a Spanish name. This recommendation has been adversely criticized by one member of the General Committee on the ground that "Rhamnus Purshiana" will never become a popular name.

Oleum Cassiæ. The Committee has recommended that this title be changed to "Oleum Cinnamomi." This recommendation has been criticized by a member of the General Committee on the ground that there are three different varieties of cinnamon recognized in pharmacy and medicine and all of which are in good use. "Oleum Cassiæ" is said to be specific and believed to be preferable.

This concludes the list of individual titles which I desire to bring to your attention at this time. As stated before, however, there are a few other suggestions upon which I would like to secure your opinion.

1. In the U. S. P. IX abbreviations of Latin titles are frequently used which are equivalent to the English title with the exception of the period, *e. g.*, "Cubeb.," "Ipecac.," "Jalap.," "Pepsin.," *et cetera.* It has been recommended that abbreviations falling in this class be dropped.

2. There are a number of abbreviations in which the final "a" or final "um" is dropped from the title, such as "Codein.," "Scill.," "Senn.," "Benzaldehyde.," *et cetera.* The opinion has been expressed that abbreviations of this kind are hardly worth while.

3. The opinion has been expressed that the abbreviation "Tr.," for tincture is likely to be confused with "Fe." for fluidextract. In view of this fact it has been suggested that it might be well for the U. S. P. to employ the safer abbreviation "Tinct."

A. G. DuMez, *Chairman.*

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE BOARD OF DIRECTORS.

Office of the Secretary, 192 Roseville Ave., Newark, N. J.

LETTER NO. 6.

(Abstract.)

November 5, 1923.

To the Members of the Board of Directors:

27. A Correction: Duplicate numbering of Letters—this has been corrected.—Editor.

28. Election of Candidate for Board of Directors: Arrangements have been made with the Board of Canvassers to count the vote and report the result to the Secretary, thus preserving the secrecy of the ballot in the same manner as it is done in A. Ph. A. elections. The question of eligibility of L. L. Walton as a candidate for the Board of Directors has been raised by several members of the Board because Dr. Walton is now Chairman of the House of Delegates and under the by-laws he could not hold that office and also be a member of the Board of Directors. In this connection it should be noted that if Mr. Walton is nominated and elected a Director, his term of office as a Director *would not begin until he is installed at the end of the Buffalo meeting.* Therefore the question of eligibility would not arise unless he were reëlected Chairman of the House of Delegates at the Buffalo meeting and even in that case he would have the privilege of withdrawing from the Chairmanship or the Directorate as he pleased. The nomination of Mr. Walton is therefore entirely proper and not in conflict with the by-laws.

29. Approval of Committee Appointments: The special committees on Horticultural Nomenclature, Coöperative Publicity, Pre-requisite Legislation, Endowment Fund, A. Ph. A. Headquarters Building, Regulation of Poison Sales and Quality of Medicinal Products, appointed by Chairman Walton of the House of Delegates, have all received the approval of the Board. The changes suggested by Secretary Day in the personnel, etc., of the Committee on Membership have not been objected to and therefore stand approved.

30. Appropriation for Headquarters Building Committee: Motion No. 4 (See item 18, Letter No. 5) has been carried.

31. Committee Appointments: Motion No. 5 (see item 25, Letter No. 5) has been carried.

32. Time of Next Meeting of A. Ph. A. Messrs. Kelly, Whelpley, Scoville and Hilton have indicated approval of the week of August 24, 1924 for the annual meeting as recommended by Local Secretary Gregory and the latter three have offered motions to that effect.

(*Motion No. 7.*) *It is moved by Scoville, seconded by Hilton, that the next annual meeting of the American Pharmaceutical Association be held during the week of August 24, 1924.*

33. Publicity for Board Business: In connection with item 23, letter No. 5, the following comment has been received:

Charles H. LaWall writes: "I heartily favor sending Board of Directors' letters to reputable pharmaceutical journals."

Henry M. Whelpley writes: "The proposal to furnish pharmaceutical journals with the letters of the Board of Directors under the conditions outlined in item 23, page 18, Letter No. 5, meets with my approval. We should give the pharmaceutical press all the coöperation we can in the way of facilities for desirable publicity. The editors are always very considerate in devoting space to the A. Ph. A."

In order to bring the matter before the Board for action the following motion is offered:

(*Motion No. 8.*) *It is moved by Fischelis, seconded by Arny, that the Secretary of the Board of Directors be authorized to send, at intervals, to the pharmaceutical journals, a resumé of the transactions of the Board which would be of interest to the profession at large.*

34. Meeting of the Board: The necessity for a meeting of the Board was brought up under item 26, Letter No. 5, and Motion No. 6 was offered and opened for discussion.

Some of the topics requiring action and which cannot, very well, be settled by correspondence are:

1. The offer of the American Druggists' Fire Insurance Co. of free space in their new building for A. Ph. A. headquarters. The Association was given six months to accept or reject the offer and referred the matter to the Board.

2. The matter of sending news bulletins or other service matter to the members of the A. Ph. A. monthly during the coming year. This would involve an expenditure of about $1500 and should be acted upon soon.

3. The matter of providing A. Ph. A. representation at State Pharmaceutical Association Conventions.

4. Providing for the publication of the A. Ph. A. Recipe Book.

5. Perfecting the details of the A. Ph. A. reorganization.

6. Perfecting the machinery of the Board, approving by-laws and getting the work of its committees under way.

It has been learned that the National Drug Trade Conference will meet at the Washington Hotel Thursday December 6th at 10 A.M. The mover and the seconder of Motion No. 6 therefore desire to amend this motion to read as follows:

(Motion No. 6 as amended.) It is moved by Arny, seconded by Fischelis, that the Board of Directors meet at the Hotel Washington, Washington, D. C. Friday December 7, 1923 at 10 A.M. and, if necessary, Saturday December 8, 1923.

35. A. Ph. A. Recipe Book: The following communication has been received from J. Leon Lascoff: "As you know the book of Unofficial Formulas of the A. Ph. A. will be ready for publication as soon as I get the exact number of formulas, which will be deleted from the new U. S. P., and N. F.

"In order to edit this book properly an appropriation of at least $500.00 will be necessary.

"Kindly take this matter up with the Board of Directors, and see that this appropriation is made.

"I am positive that this booklet when finished will bring in a large revenue to the A. Ph. A. I do not think that there is a retail pharmacist who will not buy this valuable booklet."

36. Applicants for Membership: No. 70, Nathan Cohn, 2003 Madison Ave., Baltimore, Md.; No. 71, Dr. Samuel Marvyn Shalette, 411 Throop Ave., Brooklyn, N. Y.; No. 72, John Nevin Mohr, 334 Penn St., Reading, Pa.; No. 73, Sister Mary Clara Wolf, O. S. F., New Castle Hospital, S. Mercer & Phillips St., Mercer, Pa.; No. 74, Ernest Morra, 552 Decatur St., Brooklyn, N. Y.; No. 75, Joseph F. Young, 9 Spring St., Augusta, Maine; No. 76, C. Willis Olander, 1128 Ninth Avenue, Rockford, Ill.; No. 77, Archibald E. Crosby, 318 East 2nd St., The Dalles, Oregon; No. 78, Roy Taylor, 242 Central Ave., Hot Springs, Ark.; No. 79, Joseph Karl Poch, Jr., 324 Main St., North Little Rock, Ark.; No. 80, James Elliott Turner, 346 Central Ave., Hot Springs, Ark.; No. 81, Ellis Martin Dunn, 200 Park Ave., Hot Springs, Ark.; No. 82, Raymond L. Wykoff, 800 Cumberland, Little Rock, Ark.; No. 83, Alfred John Ireland, 649 South St., Utica, N. Y.; No. 84, Thomas P. Cook, 2520 Mich. Ave., Detroit, Mich.; No. 85, Leo Bernard DeLawy, 5839 Eldred St., Detroit, Mich.; No. 86, Franklin Junkermann, 301–311 So. First St. E. Cedar Rapids, Ia.; No. 87, Margaret Ann Keenan, 3329 3rd Ave. So., Minneapolis, Minn.; No. 88, Hubert J. Reuchin, Owatounce, Minn.; No. 89, Ernest G. Swanson, Hopkins, Minn.; No. 90, Sigrid Marion Schold, 1514 Lincoln Avenue, St. Paul, Minn.; No. 91, Max Kads, Seeks Kads, Inc., 28 Elm St., New York, N. Y.; No. 92, William Henry O'Brien, Richmond, Ill.; No. 93, James Edwin Ragsdale, Manchester, Tenn.; No. 94, George Buffum Scofield, 143 So. 12th St., Lincoln, Nebr.; No. 95, Arthur G. McGrew, Canal Fulton, Ohio.

(*Motion No. 9.*) *Vote on applications for active membership.*

ROBERT P. FISCHELIS, *Secretary.*

LETTER NO. 7.

November 14, 1923.

To the Members of the Board of Directors:

37. News Bulletins to Members: At the Asheville meeting a resolution was passed by the House of Delegates which reads as follows: "Resolved that the A. Ph. A. extend to its members during the coming year additional service. Such service to consist of News Bulletins or other material which will be of direct value to the retail pharmacists and to be sent out at least once a month." This resolution is printed in the minutes of the final general session on page 908 of the October JOURNAL and comment on it indicates that the Board of Directors must furnish an appropriation for the issuing of such Bulletins if they are to be issued but that the supervision of the work will be in the hands of the House of Delegates. This matter comes before the Board officially through the JOURNAL and through a communication from General Secretary Day, dated Oct. 26th, in which he has outlined a number of matters which were referred to the Board at the final general session of the convention.

Dr. E. L. Newcomb has been particularly active in making suggestions on this matter and in order that the members of the Board may be entirely familiar with the matter the following correspondence is submitted:

The correspondence includes letters of E. L. Newcomb of October 11, November 1, Novem-

ber 7. Letters of Secretary Wm. B. Day of October 16 and November 2. Letter from Geo. Judisch of November 2; from L. L. Walton of November 3.

Letter of Secretary Fischelis of the Board of Directors, which is explanatory, follows:

NEWARK, N. J., Nov. 7, 1923.

"Dr. E. L. Newcomb,
Minneapolis, Minn.
Dear Dr. Newcomb:

"I am in receipt of your letter of Nov. 1st addressed to "fellow pharmacists" and also your letter of Nov. 1st to Dean Day.

"The work of the Board of Directors is under way and it seems to me that we ought to be given an opportunity to get organized and have the details of the reorganization fixed before deciding on the matter of Bulletins to members. As I understand it, the House of Delegates is to take care of the matter of issuing Bulletins and that the responsibility of the Board of Directors lies in furnishing the necessary funds. Now there are various ways of issuing these bulletins and it is not possible to decide immediately by mail as to which method is best. There are twelve members of the Board of whom eleven are voting members and, to my mind, it would be much preferable and certainly much quicker action could be obtained if this matter was left to be decided at the meeting of the Board which will be held early in December.

"I am placing your recent correspondence regarding the matter before the Board in a special communication but I think that those who are most vitally interested in this matter ought to furnish us with a concrete proposition so that we can intelligently decide about the expenditure involved. I am just as anxious as you are to have the Association build up a strong membership and give service to its members but there are other things to be taken into consideration before the Board can act on this matter. Outside of the resolution passed by the convention, we have nothing before us. A concrete proposition outlining just what those interested wish to do is necessary before we can appropriate any funds. If it is assumed that the Board of Directors shall act on this matter in the interim between meetings, and therefore initiate this Bulletin service, that is another matter, and here again I think that we will get much farther by personal conference and a definite decision based on such conference than by long range correspondence.

Yours sincerely,
ROBERT P. FISCHELIS,
Secretary, Board of Directors."

There is nothing concrete before the Board at this time excepting the resolution passed by the convention. It may be in order to defer consideration of the matter until the Board meets or a motion covering any action that the Board might take at this time would be in order.

38. Applicants for Membership: No. 96, Josephine L. Bauml, 1833 S. Ashland Ave., Chicago, Ill.; No. 97, Louis Shapero, 2052 W. Van Buren St., Chicago, Ill.; No. 98, Allen Spore, 5205 S. Wells St., Chicago, Ill.; No. 99, Robert Christian Nagel, 4611 Indiana Ave., Chicago, Ill.; No. 100, Jacob Newlander, 159 W. Goethe St., Chicago, Ill.; No. 101, Howard Deloss Miller, 23 So. Oakley Blvd., Chicago, Ill.; No. 102, James T. Hennessy, 1507 N. Mennard Ave., Chicago, Ill.; No. 103, Walter Anthony Staszak, 3336 So. Morgan St., Chicago, Ill.; No. 104, Solomon Bernard Mirsky, 621 S. Laflin St., Chicago, Ill.; No. 105, Abe Meyer Alderman, 3429 W. Grenshaw St., Chicago, Ill.; No. 106, Anton Otto Tysl, 5736 S. Maplewood Ave., Chicago, Ill.; No. 107, Maurice Leon Kaplan, 1833 S. Millard Ave., Chicago, Ill.; No. 108, Rudolph John Doubek, 5101 So. Hermitage Ave., Chicago, Ill.; No. 109, John Joseph Mulkern, 5834 W. Circle Ave., Chicago, Ill.; No. 110, Edward D. Wilson, 1526 So. Cedar, Lansing, Mich.; No. 111, Louis Henry Kopp, 3741 Dickens Ave., Chicago, Ill.; No. 112, Melvin Trout McIntyre, 1614 W. Adams St., Apt. F, Chicago, Ill.; No. 113, Lloyd H. VanWinkle, 1614 West Adams St., Apt. F, Chicago, Ill.; No. 114, Richard T. Szymanski, 2947 So. 49 Ave., Cicero, Ill.; No. 115, Louis B. Shapiro, 1642 W. Roosevelt Road, Chicago, Ill.; No. 116, Leo Beltin, 1424 Clifton Park, Chicago, Ill.; No. 117, Floyd Dewey Searles, 1214 N. Dearborn St., Chicago, Ill.; No. 118, Henry William F. Obartuch, 2208 West 19th St., Chicago, Ill.; No. 119, Morris Bud Kallison, 2720 So. State St., Chicago, Ill.; No. 120, Eli Kirshenbaum, 831 So. Winchester Ave., Chicago, Ill.; No. 121, Max Weinstein, 2720 N. Troy St., Chicago, Ill.; No. 122, Chester Ugnasky, 46th St. & Center Ave., Lyons, Ill.; No. 123, Leon Blake Thomas, 404 So. Ashland Blvd., Apt. B 2,

Chicago, Ill.; No. 124, Henry E. Painter, 331 South Ashland Blvd., Chicago, Ill.; No. 125, Harold H. Haeberle, 331 So. Ashland Blvd., Chicago, Ill.; No. 126, Samuel Noskin, 4827½ W. Chicago Ave., Chicago, Ill.; No. 127, Edward Mintz, 439 Englewood Ave., Chicago, Ill.; No. 128, Moore Jay Scarlitt, Wayne, Mich.; No. 129, Edward P. Akin, c/o Hall Drug Co., ElDorado, Ark.; No. 130, Clarence James Wright, Bentonville, Ark., P. O. Box 264; No. 131, Jesse Leroy Peavy, M. D., Dierks, Ark.; No. 132, W. O. Harris, 323 E. Washington Ave., North Little Rock, Ark.; No. 133, Isadore Levey, 626 Central Ave., Hot Springs, Ark.; No. 134, James Gilbert Contanche, 537 Plymouth Ave., Rochester, N. Y.; No. 135, Fred Welcome Churchill, 49 Warner Ave., Proctor, Vermont; No. 136, Charles F. Keale, 616 Myrtle Ave., Brooklyn, N. Y.; No. 137, L. C. Jayne, 7 South Maryland Ave., Port Washington, N. Y.; No. 138, Joseph G. Noh, 24 Pennington St., Newark, N. J.; No. 139, Ernest Little, 237 Benner St., Highland Park, N. J.; No. 140, Victor F. Greenslade, 107 West Main St., Bellevue, Ohio; No. 141, Samuel William Hepps, 406 Dickson St., Homestead, Pa.; No. 142, Benjamin Franklin Bell, 523½ Queen St., Mena, Ark.; No. 143, Floyd Edwin Rushing, Sheridan, Ark.; No. 144, Harvey S. Stephenson, 614 Main St., Joplin, Mo.; No. 145, William Jackson Waldrip, Jr., Magness, Ark.; No. 146, Watson Bemic Hamilton, 520 W. 5th St., Little Rock, Ark.; No. 147, Bernard Charles Fogelson, 5720 So. Park Ave., Chicago, Ill.; No. 148, William C. King, 4030—12th Ave., N. E., Seattle, Washington; No. 149, Waide Zehender, 1843 W. Adams St., Chicago, Ill.; No. 150, Harry A. Wenisch, 4134 N. Richmond St., Chicago, Ill.; No. 151, David Paul Checklin, 3216 Leland Ave., 3rd Apt., Chicago, Ill.; No. 152, Isador Edward Turek, 3519 W. Chicago Ave., Chicago, Ill.; No. 153, Harry Berman, 1001 S. Cypress St., Chicago, Ill.; No. 154, James Elsworth Harrison, 1955 Washington Blvd., Chicago, Ill.; No. 155, Cecil Fritche Oakley, 2633 W. 35 Place, Chicago, Ill.; No. 156, Sam. Lowis, 4842 S. Michigan Ave., Chicago, Ill.; No. 157, Rebecca Rosenblum, 10731 Michigan Ave., Chicago, Ill.; No. 158, Earl J. Loyd, 515 East Front St., Missoula, Mont.; No. 159, Milton E. Burns, 650 Lillie St., Elgin, Illinois; No. 160, Ralph G. Blann, 665 Grove St., Glencoe, Ill.

(*Motion No. 10.*) *Vote on applications for active membership.*

ROBERT P. FISCHELIS, *Secretary.*

LETTER NO. 8.

November 21, 1923.

To the Members of the Board of Directors:

39. Election of candidate to nomination for Board of Directors in place of H. B. Mason. L. L. Walton has been elected.

40. Meeting of Board of Directors: Motion No. 6 (see item 34, letter No. 6; also item 26, letter No. 5) has been carried. Accordingly, the Board of Directors will meet at 10 A.M. Friday December 7, 1923 at the Hotel Washington, Washington, D. C. and on the following day if necessary.

41. Selection of Date of Annual Meeting: Motion No. 7 (see item 32, Letter No. 6) has been carried. The meeting will be held during the week of August 24, 1924 at Buffalo.

42. Publicity for Board Transactions.

43. Election of New Members: Motion No. 9 (see item 36, Letter No. 6) and Motion No. 10 (see item 38, Letter No. 7) have both been carried. This elects applicants Nos. 70 to 160 inclusive to active membership.

44. Headquarters Hotel for Buffalo Meeting: Local Secretary Gregory has advised the Board of Directors that satisfactory arrangements can be made for the next annual meeting at the Statler Hotel, Buffalo, and he recommends that this hotel be selected as headquarters for the meeting.

(*Motion No. 11.*) *It is moved by Whelpley, seconded by Fischelis, that the Statler Hotel, Buffalo, be selected as the convention headquarters for the next annual meeting of the A. Ph. A.*

45. Applicants for Membership: No. 161, James Homer Morrison, 2620 Lipscomb St., Ft. Worth, Texas; No. 162, Henry Thomas Kent, Forest, La.; No. 163, Arthur Layton Lad, Smithville, Okla.; No. 164, Rubee Gilliani, Hubbard, Texas; No. 165, Joseph G. Champion, 2620 Lipscomb, Ft. Worth, Texas; No. 166, J. Reynolds Gunn, Pittsburg, Texas; No. 167, Buck Crow, Box 492, Port Arthur, Texas; No. 168, Mary Bryant, Kingsland, Ark.; No. 169, Rudolph Clarborne Myers, Truman, Ark.; No. 170, Frank Wolff, 410 No. Elm St., Hope, Ark.; No. 171, Frank Miller McDonald, Thornton, Ark.; No. 172, Joseph Clark Hawkins, Hindsville, Ark.; No. 173, Omer Ethridge Bradsher, 323 E. Markham St., Little Rock, Ark.; No. 174, Ralph C. Keener, 6229 Vernon Ave., Chicago, Ill.; No. 175, Joseph Stancell Selden, Chapel Hill, N. C.; No. 176, Howard Quinn Ferguson, Randleman, N. C.; No. 177, Urbano S. Estevarr, Chapel Hill, N. C.; No.

178, Alden Hobbs, Chapel Hill, N. C.; No. 179, Joseph Lazarus, Chapel Hill, N. C.; No. 180, William Edward Hardee, Box 737, Chapel Hill, N. C.; No. 181, Patrick Grey Glass, Box 906, Chapel Hill, N. C.; No. 182, Gustave S. Mathey, Johnson and Johnson, Research Laboratory, New Brunswick, N. J.; No. 183, Dorothy N. Diamond, 5922 Catherine St., Philadelphia, Pa.; No. 184, Daniel George Gelbert, 832 Cafouse Ave., Scranton, Pa.; No. 185, Geo. E. Porter, Berea, Kentucky.

(Motion No. 12.) *Vote on Applications for Active Membership.*

ROBERT P. FISCHELIS, *Secretary.*

MINUTES OF THE HOUSE OF DELEGATES, A. PH. A., BEING MAILED TO DELEGATES.

The minutes of the House of Delegates are being mailed by Secretary William B. Day to all delegates in attendance at the Asheville A. Ph. A. Meeting. If you do not receive your copy write the Secretary—701 So. Wood St., Chicago, Ill.

PRICE MAINTENANCE MEASURES.

The American Pharmaceutical Association and nearly all other organizations of the drug trade are exerting efforts to bring about the passage of a price maintenance measure. The members of all associations, as individuals and groups, should line up their Congressmen and Senators for a measure that is reasonable, fair and enforcible. Here is an opportunity for coöperative action and joint success.

NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION SENDS OUT BOOKLETS.

Bulletin 78 of the National Wholesale Druggists' Association issued November 14 contains a summary of the proceedings at the recent Cleveland convention. Accompanying the bulletin are four booklets "Credits in the Wholesale Drug Trade," "Manufacturers' and Buyers' Rights," "Sales Methods and Wholesale Druggists," "Why Price Maintenance Legislation is Essential," reprints of convention reports.

NATIONAL DRUG TRADE CONFERENCE CONVENES IN WASHINGTON.

The National Drug Trade Conference convened in Washington during the week of December 3; following the conclusion of these sessions a meeting of the Board of Directors, A. Ph. A., was held in Hotel Washington, December 7 and 8.

PUBLICITY BULLETINS.

The *Northwestern Druggist* is completing an investigation relating to the value of displaying publicity bulletins pertaining to pharmacy in drug stores. Over one hundred questionnaires have been mailed out to pharmacists who are using the official bulletin boards developed by the Northwestern Pharmaceutical Bureau in coöperation with the Northwest associations. The questionnaire reads as follows:

"During the past year the pharmaceutical associations of the Northwest have engaged in considerable publicity work for pharmacy. This work has taken the shape of news bulletins which have been sent out approximately once a month. In these bulletins the attempt has been made to put pharmacy in the right light before the public. Official bulletin boards have been prepared and are being used for displaying the news bulletins. Nearly one thousand of these bulletin boards are now in use in drug stores.

"At the present time we wish to determine from those who are displaying these news bulletins whether or not your customers ever look at them. Does the public comment upon the bulletins? Does this form of publicity appeal to you? Will you, therefore, kindly send to me in the enclosed, addressed stamped envelope a brief statement of your opinion about these bulletins and bulletin boards?

"We hope that you will not only discuss the results that you have noted but that you will also offer constructive criticism which may serve as a guide to our Association officers for their work during the coming year. Possibly you may have copy which you feel would make good bulletins. If so, send it in, and we will see that it reaches the proper hands. Possibly you may be willing to suggest topics to be discussed in news bulletins for the future. Any other suggestions will be thankfully received. Please let us hear from you right away."

DRUG CLERKS ESTABLISH NATIONAL HOME.

The National Association of Drug Clerks, now in its fourteenth year, has established the P. A. Mandabach Memorial Druggists' National Home, in Palmyra, Wis. The Home is for the benefit of aged and infirm drug clerks and druggists. The headquarters of the association are at 2058 N. Western Ave., Chicago.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Board of Directors, A. PH. A.: JAMES H. BEAL, *Chairman;* S. L. HILTON, *Vice-Chairman;* ROBERT P. FISCHELIS, *Secretary;* CHARLES H. LAWALL, HENRY M. WHELPLEY, JOHN G. GODDING, GEORGE M. BERINGER, CHARLES E. CASPARI, W. L. SCOVILLE. *Ex-Officio:* H. V. ARNY, President; WILLIAM B. DAY, Secretary; E. F. KELLY, Treasurer.

Collaborators: The members of the Board of Directors; the Editor of the YEAR BOOK, A. G. DUMEZ, Hygienic Laboratory, Washington, D. C.; E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; W. L. SCOVILLE, Chairman, N. F. Revision Committee; the Vice-Presidents-elect, A. Ph. A.: LYMAN F. KEBLER, F. E. BIBBINS, W. BRUCE PHILIP; the Chairmen of the Sections, A. Ph. A.: J. P. SNYDER, G. A. BERGY, ROBERT J. RUTH, HENRY B. SMITH, CLYDE L. EDDY; L. L. WALTON, Chairman of the House of Delegates, A. Ph. A.: CHARLES W. JOHNSON, President A. C. P. F.; CHARLES B. JORDAN, Chairman Executive Committee, A. C. P. F.; F. E. MORTENSON, President, N. A. B. P.; HENRY C. CHRISTENSEN, Secretary, N. A. B. P.

MEDICAL BOOZE.

Under above caption a daily newspaper recently came dangerously near classing druggists among bootleggers. F. W. E. Stedem protested and also the Editor of the JOURNAL, and, as a result, an editorial answer was printed in the paper referred to—denying the intent of "charging responsibility either upon the medical or pharmacal professions as a whole." The next paragraph of the editorial is printed in full:—

"Certainly the majority either of physicians or of pharmacists are not to be classed with the bootleggers. But the Volstead act has set up an anomalous condition, which invites citizens, chafing under prohibition, to scheme in deceit and to prevail upon their physicians and upon their druggists to supply them with contraband beverages. It has been the confession of many a reputable physician or druggist that it has been impossible to draw the line between the necessary and unnecessary prescriptions. And naturally the opportunity for illicit business is an incentive to the disreputable practitioners of either profession."

Liberty was also taken in directing the newspaper's attention to the editorials on pp. 293 and 481, Volume XII, JOURNAL A. PH. A. The editorial answer was headed—"Volstead and The Druggist."

ADDITIONS AND DELETIONS, U. S. P. X.†

Chairman E. Fullerton Cook of the Committee of Revision of U. S. Pharmacopœia has submitted a further list of admissions and deletions, printed herewith. The comments heretofore received have been carefully considered by the Referee Committee on Scope. A number of titles have been rediscussed and some are still before the Committee for final action. Comments on the lists submitted should be sent to Chairman E. Fullerton Cook, 636 So. Franklin Square, Philadelphia, Pa.

ADMISSIONS.

Acetum Scillæ; Althæa; *Ammonii Salicylas; *Bismuthi Subsalicylas; *Caffeina Citrata; *Calcii Glycerophosphas; Carbon Tetrachloride; Ceratum; Ceratum Cantharidis; *Cimicifuga; *Diacetylmorphinae Hydrochloridum; Emplastrum Belladonnæ; Emplastrum Cantharidis; *Extractum Cimicifugæ; *Extractum Malti; Fluidextractum Belladonnæ Foliorum (new, not in U. S. P. IX. The Fluidextract of the Root is also official); *Fluidextractum Sarsaparillæ; Fluidextractum Scillæ; Fluidextractum Uvæ Ursi.

Ipomœa Orizabensis (to replace Scammony); Liquor Zinci Chloridi; *Maltum; Massa Ferri Carbonatis; Pilulæ Phosphori; Quinidinæ Sulphas; Quinine Ethyl-carbonate ("Euquinine"); *Sarsaparilla; Spiritus Aetheris Nitrosi; *Syrupus Sarsaparillæ Compositus; Terebenum; Tinctura Cantharidis; Tinctura Limonis Corticis; Tinctura Lobeliæ; Tinctura Tolutana; Tinctura Valerianæ Ammoniata; Tinctura Zingiberis; Unguentum Hydrargyri Nitratis.

The following general articles will be included: Aquae; Aquæ Aromaticæ; Decocta; Extracta; Fluidextracta; Infusa; Suppositoria; Tincturae; Triturationes.

"DELETIONS."

The following additional titles, official in the U. S. P. IX, have not been admitted to the Tenth Revision:—Acidum Oleicum; Col-

† See lists previously published.

* These titles were announced as deletions but have since been admitted.

lodium Cantharidatum; Extractum Aconiti; Extractum Gentianæ; Extractum Opii; Fluidextractum Aconiti; Fluidextractum Gentianæ; Fluidextractum Lobeliæ; Fluidextractum Nucis Vomicæ; Fluidextractum Veratri Viridis; Linimentum Terebinthinæ; Liquor Sodii Glycerophosphatis.

Oleatum Hydrargyri; Oleoresina Cubebæ; Oleum Sesami; Opium Deodoratum; Pilulae Ferri Iodidi; Pilulæ Rhei Compositus; Pulvis Aromaticus; Scammoniæ Radix (Replaced by Ipomoea Orizabensis); Serum Antidiphthericum Siccum; Serum Antitetanicum Siccum; Spiritus Juniperi Compositus; Tinctura Cannabis; Tinctura Cinnamoni; Trochisci Cubebæ; Trochisci Potassii Chloratis.

PERSONAL AND NEWS ITEMS.

Dr. Frederick B. Kilmer has established a fellowship research in Pharmacognosy and Plant Chemistry in the Philadelphia College of Pharmacy and Science. The annual income is about $400, and the Scholarship applies to post graduate work.

F. B. Power, Chemist in Charge of Phytochemical Investigations, Bureau of Chemistry, U. S. Department of Agriculture, and **V. K. Chesnut** are making an investigation of the odorous principles of the cotton plant. This work is carried on in coöperation with the Bureau of Entomology.

Charles O. Lee, in a letter to *American Druggist,* November issue, reports the loss by fire of the main hospital building, of Wuhu General Hospital, China. Mr. Lee retains his membership in the A. Ph. A., and will be remembered for his work in the Sections.

Samuel W. Fairchild was chairman of a special chemical manufacturing group participating in the Red Cross Roll Call, New York City.

W. A. Hover, Denver, Col., is taking a well-earned rest for several months. Mr. Hover has been a member of the Association for many years. His interest in Denver meetings and in members who stopped over in going to conventions further west will be remembered by those to whom these hospitalities were extended.

Joseph L. Lemberger, veteran member of the American Pharmaceutical Association (1858), has not been very well recently; however, Mr. Gleim reports that he is gaining strength.

John H. Webster, President of the National Association of Retail Druggists, was the recipient of congratulations and of resolutions of appreciation at the recent meeting of Detroit Branch, A. Ph. A. See minutes in this issue.

A French pharmacist poet-laureate dedicated a poem to the memory of Pharmacist **Willot,** whose monument was recently unveiled at Lille, France.

The father of protozoölogy and bacteriology, **Antonius van Leeuwenhoek,** was born August 26, 1723. The great microscopist is said to have had 247 microscopes with 419 lenses, most of which he himself ground. F. H. Garrison has summarized the former's accomplishments in his History of Medicine.

John Harrison, first successful manufacturer of sulphuric acid, was born in Philadelphia, December 17, 1773. The manufacturing establishment grew out of the drug business owned by Mr. Harrison and, later, the successors branched out into the manufacture of paints. It is of interest to note that the first platinum stills for this founder of an industry were manufactured by Eric Bollman, to replace glass concentration retorts.

"The Oldest Apothecary Shop in Boston" was written up and illustrated in the *Boston Evening Transcript* of September 22—the week before the National Association of Retail Druggists held its Silver Jubilee at the Massachusetts capital. The store was founded by Thomas Hollis in 1821, and still does business under the name of Thomas Hollis & Co., at 23 Union Street, where it has been since 1826. Thomas Hollis attended the earlier meetings of the American Pharmaceutical Association.

"The Compleat Chymical Dispensatory"—written in Latin by Dr. John Schroder and Englished by William Rowland, printed by John Darby in 1669, bound in sheep by Clarke and Bedford, London—was presented, recently, to the Philadelphia College of Pharmacy and Science by the widow of the late Prof. Joseph P. Remington. The book was originally owned by William Penn, as evidenced by his bookplate opposite the title page and his characteristically autographed initials on the title page "W. P. 92," evidently showing the date of its acquisition, and two other autographed initials, one on page 545 in the body of the text, and one on the final page.

Ex-President E. L. Patch has replied to the round robins from Asheville, the messages, etc., expressing his appreciation of these remembrances. He was the presiding officer at the former Asheville Convention.

Johnson & Johnson are sending out copies of the code of ethics, as adopted by the American Pharmaceutical Association, in booklet form. The foreword states:—"As you read these principles you will better understand the full significance of the pharmacy slogan, "Your Druggist Is More Than a Merchant."

Burroughs Wellcome & Co. have become settled in their new office building, 9 & 11 E. 41st Street, New York City.

McKesson & Robbins have discontinued the sale of the general line of "patent medicines" and sundries, and will devote their attention to the lines of their own production in drugs, chemicals, sundries, etc.; no change in location, offices, factories, etc., is contemplated.

An executive committee meeting of the American Druggists' Fire Insurance Company was held November 19–20 in Cincinnati for making preliminary arrangements for the annual meeting. The Central Parkway Bond Issue was defeated at the November election along with other bond issues, however, the vote for the former was fully 17,000 ahead of the latter, and there is reasonable assurance of approval in April. The early erection of the Home Office Building depends upon the necessary bond issue to improve the Central Parkway.

Standard Remedies has recently purchased the *Proprietary Record*, formerly published by the Lightner Publishing Company of Chicago. The office of *Standard Remedies* is now in Washington, in Star Building.

OBITUARY.

LOUIS L. STAEHLE.

Louis L. Staehle, member of the American Pharmaceutical Association, one of the founders of the New Jersey College of Pharmacy and for many years its treasurer, died at his home in South Orange on the evening of November 14th. Mr. Staehle was born in Short Hills, New Jersey, November 19, 1858, and was the son of Louis L. Staehle and Mary Traumiller. He came to Newark with his parents at the age of 10, and was graduated from the New York College of Pharmacy in 1876. His first position was with Dr. Fridolin Ill, in Newark. Three years later he entered the drug business and at one time had three stores. At the time of his death he was still in business at 169 South Orange Avenue.

He was a member of the Board of Governors of the Women and Children's Hospital, an institution with which he was associated from the time of its foundation. He took care of the pharmaceutical dispensary at this institution up to the time of his last illness. He was a director of the Bethany Home for the Aged in Irvington and was vice president of the New Jersey Pharmaceutical Association.

Mr. Staehle is survived by his wife and two sons, Herman V. and Dr. Richard H. Staehle of Newark, as well as four brothers and three sisters. The funeral services were conducted at Christ Presbyterian Church. Saturday, November 17th.

Through the death of Mr. Staehle, the New Jersey College of Pharmacy lost one of its staunchest friends and the New Jersey State Pharmaceutical Association, likewise, suffers the loss of an ardent worker.—R. P. F.

John W. Parry, vice-president and secretary of Merck & Co., New York, died at his home in Mt. Vernon, N. Y., on October 29. He was 66 years old, having been born in Lancashire, England, in 1857. Mr. Parry entered the employ of the company 40 years ago.

C. M. Chism, father of our fellowmember, **J. S. Chism** of Wichita, Kas., died October 17, after a lingering illness, aged 79 years.

IN MEMORY OF **JOHN FRANCIS HANCOCK** WHO JOINED THE AMERICAN PHARMACEUTICAL ASSOCIATION IN 1863 AND WAS ELECTED ITS PRESIDENT IN 1873.

H. V. ARNY.

The present president of the American Pharmaceutical Association desires to register this tribute of appreciation and of affection to the good man who last month was our oldest living ex-president. A span of fifty years stretched from the term of Dr. Hancock to the term of the present president; a period not often thus attained in association work.

And yet those of us who were honored by the friendship of Dr. Hancock could scarcely realize that fifty years had slipped by since our dear friend had occupied the presidential chair, for even in his later years he was with us at most of our annual meetings and seemed as alert in his interest in our association as were his juniors.

A rarely choice man was our dear friend, a veritably gentle man. It was a blessed privilege to know so kindly, so good a person and we feel that a benign influence has been taken from us.

E. F. KELLY.

Dr. Hancock was held in affection and esteem by every one with whom he came in contact, because he was that rare combination of modesty, high idealism, and strength of character, with a deep love for his fellow-man and the broadest tolerance for the beliefs of others. His wide influence for good was due in a great measure to this sympathetic attitude and to his remarkable ability to secure the harmonious coöperation of those with whom he worked. The long and faithful service he so cheerfully gave his profession, his genuine interest in all that was for the betterment of his fellows, and his truly beautiful private life will secure for him a lasting place among the great pharmacists of his generation.

HENRY M. WHELPLEY.

A wide span rather than brevity of human life is impressed on me when I realize that Dr. Hancock was born when the first revision of the United States Pharmacopœia was in use.

He was dean of the ex-presidents of the American Pharmaceutical Association, as none who held office before he did in 1873 survived him. He lived to see the passing from this world of thirty-one who served as president since his term of office.

Perhaps he will be most frequently referred to as the one who originated the idea of a monument to the father of American Pharmacy, William Procter, Jr. The fund of about $11,000.00 which he raised is held by the A. Ph. A. in trust.

The character of Dr. Hancock was clearly stamped "Sterling." His interest in pharmacy was constant for more than half a century. His accomplishments were noteworthy in kindred interests as well as in pharmacy.

When I recall a personal friendship of thirty-nine years, I realize that Dr. Hancock was one who radiated pharmaceutical interest and built confidence in the minds of those who worked with him. I cherish his memory as do all who had the privilege of personal touch with this good man.

H. H. RUSBY.

First of all, we should be thankful for the great length of time during which Dr. Hancock was spared to us, and for the fact that he retained his usefulness so long. Excellent as was the public work that he performed, I think he will be best remembered in his personal relations. His kindness and his courtesy were never-failing, and his friends were never forgotten. One of the first courtesies that I received on my entrance upon public service in pharmacy was at a cozy and warm-hearted gathering in Baltimore, arranged for me by Dr. Hancock, and it is still one of the sweetest of my recollections of those early years. How many persons have lived better and succeeded better because of his precept and example!

JOHN G. GODDING.

The passing away of Dr. John F. Hancock removes an Ex-President and one of the most loyal members of the American Pharmaceutical Association, a man of strict integrity, the finest type of a gentleman in whom true courtesy existed. A life enriched with the best gifts of God has passed on.

His acquaintance and friendship I highly valued and respected.

GEORGE M. BERINGER.

In the decease of John F. Hancock, another outstanding figure in American pharmacy, who was universally esteemed, has passed to the "great beyond." Another good man, who during his life was devoted to his calling and who always did honor to it, has answered the commander's summons and his spirit "has crossed the bar." Another dear friend has earned his title to eternal rest and one more portrait hangs in the gallery of our memory draped in sombre mourning.

The friendships that one makes at gatherings of kindred spirits, radiate continuous enjoyment. It was my good fortune to meet Mr. Hancock at various gatherings of pharmacists during the last quarter of a century or more. Our early acquaintance soon ripened into a firm friendship and on each of these occasions we managed to spend some time together, welding each time more firmly the bond of fellowship. From the first, I admired the uprightness, the unselfish motives that inspired his actions. I esteemed and prized his confidence and friendship, and wish to attest my appreciation of his worth.

John F. Hancock was zealous in his purpose that proper recognition should be made and honor paid to the labors and sacrifices of the great leader in the founding of scientific American pharmacy and that a monument should perpetuate his services as of national importance. It is to be regretted that during

the life of this earnest advocate of such action, the American Pharmaceutical Association did not complete this great desire of his later years to memorialise the great services of Professor William Procter, Jr. by a national monument.

The character and upright life of Mr. Hancock has left an impression on pharmacy that should serve as an example well worthy of emulation. No more fitting tribute could be paid alike to him and to the great pharmacist that he sought to honor than to promptly complete the project to which he was so devoted and eloquently presented on many occasions.

A. R. L. DOHME.

A highly respected and very devoted friend of pharmacy and the American Pharmaceutical Association after a long life dedicated to pharmacy passed away on November 12th, 1923 in the person of Dr. John F. Hancock of Baltimore. At the time of his death he was probably the oldest member of the American Pharmaceutical Association and its oldest living ex-president.

I have known Dr. Hancock since I was a young man and have always found him interested and devoted to his profession and willing to do all he could to help it and everyone connected with it. He was gentle and quiet in his manner and in his public service work conscientious and cordially interested in its success.

SAMUEL L. HILTON.

It is to be very deeply regretted that we have lost such a fine and noble character as Dr. John F. Hancock, the oldest living Ex-President of the A. Ph. A. I have known Dr. Hancock, for more than 35 years; no finer and nobler man than he ever lived among us. It was always a pleasure to meet and talk with him; his high aims, noble character, fine personality and that high regard for what was elevating and best for pharmacy endeared him to every one who knew him. He will be missed and pharmacy and the American Pharmaceutical Association have lost one of their noble sons. Providence was kind to him and I am sure he has gained the reward he so untirelessly strived for.

CONCLUDING REMARKS BY PROF. CHARLES H. LAWALL AT MEMORIAL SERVICE TO DR. JOHN F. HANCOCK.

Pharmacy cannot honor the memory of Dr. Hancock for it is he who by his life and example has honored Pharmacy. We can and should pay tribute to his memory.

Emerson said: "Nature seems to exist for the excellent. The world is upheld by the veracity of good men. They make the earth wholesome."

So it was with Dr. Hancock, and the world is more wholesome through his having been with us so for many years.

(To be continued.)

SOCIETIES AND COLLEGES.

PHILADELPHIA ASSOCIATION OF RETAIL DRUGGISTS CELEBRATES SILVER ANNIVERSARY.

The Philadelphia Association of Retail Druggists celebrated its twenty-fifth anniversary with a banquet and entertainment at McAllister Hall, November 15.

The artistic souvenir of the occasion gave an historical account of the organization which now has a membership of over one thousand, who have evidenced their faith in the organization by purchasing a home, which is primarily for the purpose indicated but has become a revenue producer, sharing honors in that respect with the *P. A. R. D. Bulletin*. Twenty-two presidents have served as directing officers, and most of them share the interest of the younger members. National honors have come to a number of these past presidents:—Thomas H. Potts, Samuel C. Henry and Ambrose Hunsberger. Secretary Otto Kraus directs the office affairs and welcomes the visitors.

The menu was elaborate and the toastmaster of the evening was Ambrose Hunsberger. Responses were made by Drs. John Minehart, Norman Henry, William Duffield Robinson, Prof. E. Fullerton Cook, E. G. Eberle, representatives of the municipal government and officers of the Association.

The attendance was large, the music good and the entertainment well arranged and held the guests until after the midnight hour. In every respect the Silver Anniversary celebration was a success.

DETROIT RETAIL DRUGGISTS' ASSOCIATION HONORS J. H. WEBSTER, PRESIDENT OF THE N. A. R. D.

John H. Webster, president of the N. A. R. D., was the guest of honor at a dinner given by the Detroit Retail Druggists' Association and their friends of the manufacturing and wholesale branches of the trade which was held on the evening of November 15, at the Detroit Chamber of Commerce. President Glenn Staines, at the conclusion of the dinner, spoke of the services of Mr. Webster and the esteem in which he is held locally and nationally, and then introduced as the toastmaster of the evening, Harry B. Mason. The speakers who responded to the toasts represented local, state and national associations; the retail, wholesale and manufacturing industries. All the members of the Michigan Board of Pharmacy were present and also visitors from adjoining states, nearby and some from more distant cities.

The guest of honor was presented with a chest of silver and beautiful floral pieces, but above all the sincere appreciation and evidence of friendship marked the evening.

ILLINOIS PHARMACEUTICAL ASSOCIATION EXECUTIVE MEETING.

At the semi-annual meeting of the executive committee of the Illinois Pharmaceutical Association, held in Chicago, November 20, which was attended by the officers of the organization and the members of various committees, Secretary William B. Day presented a report for the past half year, including also the annual budget. Secretary Day stated that the collections of dues since June 1 had been considerably larger than those of the corresponding period a year ago, owing to the membership campaign. He called attention to the newly-issued proceedings of the convention held on the Steamship "South American" last June. Treasurer George M. Bennett reported a balance in the treasury of $1,363.69, after deducting expenditures since the last convention amounting to $926.46.

LaSalle was chosen for the next meeting place of the Association. The membership campaign was re-inforced and wholesale druggists were invited to share in the state-wide drive; President Crowley's desire is to bring in every eligible non-member.

S. L. Antonow reported that excellent cooperation was being given by the State Department of Education and Registration, and that several hundred cases of prosecution of grocers and others for selling iodine and other drugs which they had no right to sell had already been instituted by the department.

TEXAS PHARMACEUTICAL ASSOCIATION NOW EMPLOYS AN INSPECTOR.

The Executive Committee of Texas Pharmaceutical Association has employed R. A. Green as an inspector in the field to look after and prosecute violations of the State pharmacy law. Mr. Green made his reputation by cleaning up the city of Dallas of violators of laws applying to pharmacy. Many complaints have been coming into the offices of Secretaries Adams and Cousins in which it is charged that drug stores are operating without pharmacists in charge.

NOVEMBER MEETING OF DRUG AND CHEMICAL SQUARE CLUB.

The Drug and Chemical Square Club held its regular monthly meeting at 1947 Broadway, New York on November 15th. There were 600 members and visitors present. This undoubtedly was the banner meeting of the year. Fifty-two candidates were initiated. A large delegation of drug and chemical men arrived in busses from points in New Jersey, headed by President Rollins of the Woodcliff Square Club.

Prof. Hugo Schaefer of the New York College of Pharmacy, H. B. Smith of the Brooklyn College of Pharmacy, J. J. Kallman of Lehn & Fink, and many other well known men were present, as were delegations from most of the large manufacturing companies such as Merck & Co., Norwich Pharmacal Co., J. B. Williams Co., American Druggists' Syndicate, Louis K. Liggett Co. and many others.

The initiation stunts, vaudeville and refreshments were enjoyed by all. The election of officers will take place at the December meeting and, in addition, a first class vaudeville entertainment will be held in the Empire Room of the Waldorf-Astoria.

PENNSYLVANIA PHARMACEUTICAL ASSOCIATION PREPARING FOR 1924 CONVENTION.

The *Pennsylvania Pharmacist* for November announces the appointment of George F. Metzger as local secretary for the annual meet-

ing of Pennsylvania Pharmaceutical Association to be held in Bethlehem. Details of the program will be considered at a meeting to be held this month, at which President P. Henry Utech and Secretary Louis Saalbach are to be present.

BOGUS DIPLOMAS.

Last year our own National Secretary of the Boards of Pharmacy, H. C. Christensen was largely instrumental in exposing unlawful procedure in granting State Certificates for medical and pharmacal practice. Now again investigations are going on which have exposed questionable medical licensure and diplomas that do not attest qualification in accordance with law. For a time it seemed as though pharmacy was not directly concerned, but later investigations include pharmacy diplomas.

No period has been free from quackery; the extent to which this vicious business of preying on the hopes of the ignorant and the credulous obtains is almost unbelievable. The *Boston Transcript*, of recent date, says that an institution of the kind referred to offers for $36 a course of cure which makes this modest claim: "This school actually instructs how by simple scientific procedure to restore many classes of dead persons to life. It is being done every day, and you can accomplish this result when you understand the principle and process required." Another Western institution offers a diploma for $15, and another sent a trainload of barbers, car conductors, waiters and other hopeful artificers, who had received its "medical diplomas," to Hartford to be officially licensed under the laws of Connecticut to practice the art of cure.

The Post Office Department on November 5th issued a fraud order against the Oriental University.

In a "Bulletin" issued by the Oriental University in November, 1921, it was stated that: "The attacks made upon the Oriental University in all the various countries during the last year prove conclusively that Oriental University is a world-renowned university, and that it is looked upon by some as practically representing American educational ideals."

POPULAR SCIENCE TALKS BY RADIO.

An interesting series of popular, weekly science talks is being radio-broadcast by members of the Faculty of the Philadelphia College of Pharmacy and Science from station WIP. The subjects are as follows: The Age of Aluminum, by Prof. Ralph Foran; Radio, by Dr. George Rosengarten; The Great American Rubber Industry, by Dr. J. W. Sturmer; Chemistry in the Home, by Prof. F. P. Stroup; Atmospheric Comfort, by Dr. David Wilbur Horn; Artificial Silk, by Dr. Charles E. Vanderkleed; The Conquest of Malaria, by Dr. Horatio C. Wood, Jr.; The Romance of Insulin, by Prof. Ivor Griffith. It is intended to continue this service regularly as one of the contributions of the College to the educational welfare of the community.

MASSACHUSETTS COLLEGE OF PHARMACY CENTENNIAL.

The Massachusetts College of Pharmacy, organized in 1823, celebrated its centennial on the fourteenth of November, when classes were suspended for the day. The exercises were held at three o'clock in George Robert White Hall at the College, with William H. Glover, President of the College, presiding. Payson Smith, Commissioner of Education of Massachusetts, delivered the main address, his subject being *Educational ideals in a professional school.* Other speakers were James M. Curley, Mayor of Boston; David L. Edsall, Dean of Harvard Medical School, and Theodore J. Bradley, Dean of the College. The music was by the Salem Cadet Orchestra.

In the evening there was a dinner at the Copley Plaza, with Theodore J. Bradley, Dean of the College, presiding. The speakers were William H. Glover, President of the College; Adolf H. Ackermann, President of its Alumni Association; Henry V. Arny, President of the American Pharmaceutical Association; Evander F. Kelly, Dean of the Department of Pharmacy of the University of Maryland; Charles H. LaWall, Dean of the Philadelphia College of Pharmacy; Henry H. Rusby, Dean of the College of Pharmacy of the City of New York; and Edwin F. Leonard, Mayor of Springfield, Massachusetts, who is also an active pharmacist.

The College was organized late in 1823 as an association of pharmacists, with Dr. Ephraim Eliot, A.M. (Harvard, 1780), as its first president. The objects of the association, as set forth at that time in the *Preamble* to its *Constitution and By-laws*, were: "to provide the means of systematic education, to regulate the instruction of apprentices, to promote a spirit of pharmaceutical investigation and to diffuse information among the members, to

discountenance the sale of spurious and inferior articles, to regulate the business as far as practicable and consistent with our social institutions, to cherish habits of friendly intercourse, and, in general, to advance the character and interests of the profession."

Meetings of the association were held semiannually at first and then quarterly, with monthly meetings of the Board of Trustees. Efforts were made to establish a course of instruction for the apprentices, and in April, 1824, a Library Committee of three members was appointed and an appropriation was made for the purchase of books. The Library has had a continuous existence since that time. Its first catalogue, published in 1829, contains also a list of the members of the College, and a *Course of study for the apprentices.*

In April, 1851, the College was thoroughly re-organized, its *Constitution and By-Laws* revised, and pharmaceutical meetings especially devoted to scientific purposes were appointed for each month. In 1852 the College was incorporated under the laws of Massachusetts, and in 1876 its act of incorporation was indefinitely extended. Courses of lectures in chemistry were delivered in the winter of 1853 by Dr. Charles T. Jackson, and in the following winter by Professor Cooke of Harvard. A course in pharmaceutical chemistry was given in 1858–1859.

In the fall of 1866 the Board of Trustees appointed a committee to see if enough young men employed in drug stores could be enrolled to form a class. Early in 1867 about twenty responded to the invitation and were formed into a class by Mr. George F. H. Markoe, who delivered a course of lectures to them, during the spring, on practical pharmacy. As this beginning seemed promising, the College decided to establish a permanent school of pharmacy, and secured lecturers on pharmacy, chemistry, materia medica and botany for the first session, which commenced in the fall of 1867. The chemistry class was held at the Massachusetts Institute of Technology, Professor Storer assisting in organizing the course, but the other lectures were given at the College rooms on Temple Place. Later, a lease was taken of rooms at Boylston Street, in a building next beyond the old Boylston Market, where the school remained for several years. In 1876 it removed to the old Mayhew School building, on Haskins Street, but was burned out there in January, 1877, and the remainder of that session was held at the Massachusetts Institute of Technology.

In 1878 the College occupied the old Franklin School building, on Washington Street, where it remained until it moved to the building at 70 St. Botolph Street, at the corner of Garrison Street, which was erected for its special use. It continued to occupy this building for thirty-two years, until the summer of 1918, when it removed to its new building on Longwood Avenue, the gift of Mr. George Robert White.

UNIVERSITY OF MICHIGAN COLLEGE OF PHARMACY.

The faculty of the College of Pharmacy, University of Michigan, has empowered Dean Kraus to appoint a committee to study and make a preliminary report on the advisability of instituting a combined pharmacy-medicine curriculum.

STUDENTS COST YALE THRICE THEIR FEES.

The average expenditure per student in Yale by the University is $835, the average income from students is $267. The income from the students of the School of Medicine was somewhat higher than the average but the expenditure per student was more than twice the average. The figures are taken from the report of 1922–1923.

THE PHARMACIST AND THE LAW.

MISUSE OF STATISTICS FOR PROPAGANDA PURPOSES.*

A common characteristic for those who engineer propaganda for various uplift movements is the wholly reckless manner in which they employ alleged statistics to bolster up their claims to public support.

To prove the necessity of their proposed reform some rare and exceptional abuse is seized upon and represented as a usual and regular occurrence, instead of the one case in a thousand it really is. If definite figures are lacking they are manufactured or guessed at. If available statistics do not support the de-

*From "The Force behind the Law," an address by James H. Beal, before N. A. R. D. convention at Boston.

sired conclusion they are twisted until they fit; if other statistics contradict their claims they are incontinently suppressed.

A noted historian in remarking upon this common weakness of reformers says:

"Men who would scorn to tell a lie in everyday life will become unscrupulous cheats and liars when they have given themselves up to propagandist work; it is one of the perplexing absurdities of our human nature."

It is possible even for the experienced prevaricator to use the exact truth in such a way as to produce all the practical effects of a lie, and statistics truthful of themselves may be so manipulated as to seemingly justify entirely false conclusions.

A favorite method with reformers is to show that many inmates of charitable and penal institutions have had some particular habit, from which they deduce the conclusion that the bulk of poverty and crime is due to use of the thing they propose to prohibit, which is by no means a necessary deduction.

In this manner it can be shown that since the general adoption of anti-narcotic legislation there has been a noteworthy increase in savings bank deposits, a lessened death-rate, an improvement of living conditions among the poor, and that various other good things have happened, and an enthusiastic reformer might therefore quote these figures as a triumphant vindication of the prohibition of the traffic in habit-forming drugs.

If we investigate further, however, we shall find that for many years prior to the anti-narcotic laws there was a regular annual improvement in savings deposits, in the average death-rate, and in the standards of living; and if we examine the figures for Switzerland, Holland, Denmark, Sweden and some other European countries, where such laws as ours do not prevail, we shall find similar, and in some cases even greater, improvement than have occurred in this country. Moreover, while crimes and misdemeanors, with some exceptions, have generally decreased in these foreign countries, they have at the same time largely increased in our own. It follows, therefore, that the improvement which the reformer boasts of could not by any chance have been due to the particular piece of legislation to which he gives the credit, but must have been the result of quite different factors.

Unless we can be certain of having all the facts we had better leave statistics alone—especially reformers' statistics—and rely upon everyday observation and common sense in judging of the success, or lack of success, of a given piece of reform legislation.

PRICE MAINTENANCE BILLS IN CONGRESS.

Representatives Merritt of Connecticut and Kelly of Pennsylvania have re-introduced price maintenance bills. Study them and coöperate with your associations for the success of a measure which meets the approval of the American Pharmaceutical Association. The Metric System bill has also been re-introduced by Representative Britten of Illinois.

CONSOLIDATION OF BOARDS OF PHARMACY.

The members of the Iowa Pharmaceutical Association are opposing consolidation of boards of pharmacy. Other states will probably consider legislation of this kind and, therefore, preparations should be made early to defeat measures that are not acceptable.

President L. L. Walton, N. A. B. P., now Chairman of the House of Delegates, A. Ph. A., gave considerable attention to the subject in his address; his objections are tersely stated in the following:

First: It robs each profession of its right to be judged solely by its own members, through placing this authority with a Board made up of representatives of different professions.

Second: It undermines the obligation of the professions to develop and maintain progress in requirements for professional practice, by transferring the responsibility for enforcing the laws and regulations to more or less disinterested persons.

Third: It provides a professional licensing system which is controlled in part by representatives of professions having conflicting interests, thus opening the way for formation, within the Board, of alliances that may dominate in administration of the laws, and harass, injure, or crush out a profession that it finds objectionable.

Fourth: The sole politically appointed head or administrator of the Board, if so disposed, may manipulate the registration machinery of the system in such manner as to make professional license a reward for the friends of a politician, or a source of revenue for himself; thus defeating completely the protection and competent service that laws regulating professional vocations are designed to give the public.

Fifth: It is thus a system potential in trouble and dissatisfaction for every profession which may be included in it.

The Illinois affair is of too recent occurrence to have been forgotten.

STATE AND MUNICIPAL TAXES GROWING.

In a review, in *The Budget*, issued by the National Budget Committee, of the mounting cost of governing the American people, a warning is sounded that at the recent rate of increase "within a decade the cost of government in the forty-eight States—exclusive of the cost of governing our cities, towns, counties and villages—will approximate $5,500,000,000.

NEW NARCOTIC ORDER FORMS.

EFFECTIVE DATE OF TREASURY DECISION 3460 ADVANCED TO JANUARY 1, 1924—NEW FORMS PROCURABLE NOVEMBER 26.

Herewith is copy of T. D. 3531, just issued, which changes the effective date of T. D. 3460 from March 1, 1924, to January 1, 1924.

T. D. 3460 embraced regulations and instructions for the use of the new narcotic order forms and its effective date was postponed to March 1, 1924, for the reason that the Bureau of Engraving and Printing could not sooner deliver a sufficient supply of the new forms to enable collectors to furnish taxpayers with the quantities needed. During the past month, however, work on these forms has proceeded with unexpected rapidity and large quantities of forms have been printed from the new plates; hence, the Bureau now finds it practicable to put the new form into use on January 1 next instead of March 1.

The price of the new forms will remain the same as that now charged for old forms.

(T. D. 3531)

THE EFFECTIVE DATE OF T. D. 3460 DEFERRED TO JANUARY 1, 1924.

Treasury Department,
Office of Commissioner of Internal Revenue,
Washington, D. C.

T. D. 3473, approved May 5, 1923, is hereby revoked and the first sentence of paragraph 1 of T. D. 3460, approved April 6, 1923, is hereby amended to read as follows:

"1. On and after January 1, 1924, only order forms for opium, etc., of the series of 1923 may be filled."

Paragraph 6 of said decision is also amended to read as follows:

"6. This decision shall take effect at once except as to paragraphs 2 and 3, which shall take effect January 1, 1924; provided, however, that forms of the 1923 series which may be made out prior to that date must be prepared in accordance with paragraph 2. Collectors are hereby authorized to fill all requisitions (Form 679) received on and after November 26, 1923, with forms of the 1923 series, which may be used by the purchasers as soon as received. Persons qualified to fill orders (see Art. 109½) are hereby authorized to accept forms of either series during the period November 26, 1923, to December 31, 1923, inclusive, if presented for filling."

Dealers should secure T. D. 3460 from the Collector of Internal Revenue; this gives instructions governing sale of order forms, execution and filling of order forms, etc.

PROHIBITION-NARCOTIC BUDGET OVER $10,000,000 FOR 1925.

More than $10,500,000 is asked for the enforcement of prohibition and narcotic laws during the next fiscal year, according to Treasury estimates submitted to the budget bureau. This includes requested appropriation of $1,250,000 for enforcement of the Harrison law, or an increase of $500,000 over this year's allotment. The appropriation asked for enforcement of the prohibition laws is $1,000,000 greater than allowed for the fiscal year ending June 30, next, and no details are available as to just how it is to be used. The above total, combined with the $28,500,000 supplemental appropriation for additional coast guard cutters and personnel and the requested $10,000,000 for regular guard maintenance, makes more than $48,000,000 which will be asked of Congress for enforcement of prohibition and drug laws and prevention of rum smuggling during the fiscal year 1925.

One of the largest seizures of narcotics ever made on a vessel at San Francisco was made November 6, when 677 tins were discovered hidden between the double walls of staterooms of the Japanese liner "Taiyo Maru" upon the vessel's arrival from the Orient.

PRICE MAINTENANCE AND TAX REDUCTION.

Price maintenance and tax reduction are legislative items that this Congress will consider. The results will depend largely on your interest and that of your association. Write your senators and congressmen.

To You—

The Progressive Druggist!

A Message

There are over 20,000 physicians practicing Intravenous therapy (your territory has its quota) that must be supplied. Thousands of institutions also regularly require Intravenous supplies.

Endo-Intravenous Solutions are preferred by physicians because they are pure, dependable, isotonic and marketed in alkali-free ampoules which prevent deterioration. There is no substitute for Endo-Intravenous Solutions, hospitals use them, *they must be good.*

Three years' constructive medical journal advertising has created a demand for the Endo Line. May we refer doctors in your community, who are users of Endo-Intravenous Solutions, to *you* for their supplies?

Our sales plans guarantee results to the druggist. Our service begins when your name goes on our list and continues while you are on that list. We develop your territory by sales work and direct mail campaign.

Make us prove this. Write Today

Send your letterhead or write plainly your name and address across the face of this advertisement and MAIL TODAY. We will show you how to increase your profits.

"The best is none too good for Intravenous use"

Intravenous Products Co. of America

Incorporated

239 Fourth Ave. **New York**

"We are advertised by our loving friends"

Mellin's Food

is a soluble, dry extract, made from wheat, malted barley and bicarbonate of potassium. The starchy portion of the wheat and barley is transposed by the natural enzyme — malt diastase — into the soluble carbohydrates

Maltose and Dextrins

During the process of manufacture the protein of the grains as well as the salts that are present in the covering of the grains are retained and the bicarbonate of potassium is added. By further manipulation and subsequent evaporation the whole is reduced to a dry powder which consists of maltose, dextrins, proteins and salts in definite proportions as given in the accompanying analysis:

Analysis of Mellin's Food

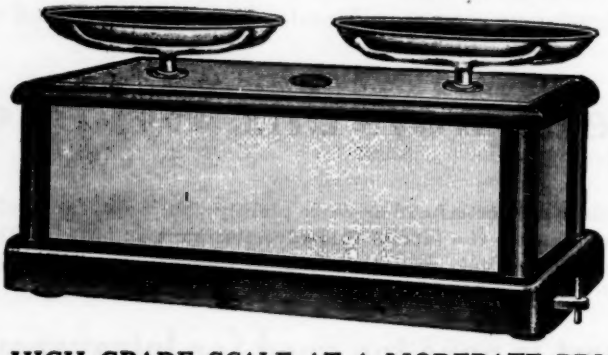
Fat	.16
Proteins	10.35
Maltose	58.88
Dextrins	20.69
Salts	4.30
Water	5.62
	100.00

Mellin's Food is a means to aid the physician in modifying fresh cow's milk.

Mellin's Food Company, **Boston, Mass.**

NEW COUNTER SCALE NO. 259

Capacity
10 lbs.



Sensitiveness
5 grains

A HIGH GRADE SCALE AT A MODERATE PRICE

Case—High grade hardwood, mahogany finish, ground glass panels, ground glass bevelled top, with index.

Pans—Removable, nickel plated, brass, 8″ diameter. Price, $40.00.

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Make More Profit on Brown Mixture Prescriptions

by the use of Consols, the concentrated solutions containing all the ingredients entering into Brown Mixture except water.

CONSOL No. 5 makes Brown Mixture U. S. P. by the simple addition of water. One pint of the Consol makes four pints of the best Brown Mixture.

Pints, each $1.05 net. Gallons, each $7.65 net.

CONSOL No. 6 makes Brown Mixture without the narcotic content, obviating the keeping of narcotic records, and is made up in the same manner.

Pints, each 85c net. Gallons, each $5.45 net.

Consols Nos. 5 and 6 will not only save you *time* and *trouble,* but will actually increase your *profit* on these prescriptions.

Your jobber can supply you, or we would be glad to send samples for demonstration. For No. 5 give narcotic registry number.

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THE WM S. MERRELL COMPANY
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There can be no higher degree of purity than that which is presented to you under the label N. Y. Q.

Acetanilide	Iodoform
Bismuth Subnitrate and other Bismuth Salts	Mercurials (Hard)
Codeine and its Salts	Morphine and its Salts
Creosote	Opium Powder
Creosote Carbonate	Opium Gran.
Diacetyl-Morphine	Potassium Iodide
Formaldehyde	Quinine and its Salts
Glycerophosphates	Silver Nucleinate
Hexamethylenamine	Silver Proteinate
	Strychnine and its Salts
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McK & R

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INCORPORATED
Manufacturing Chemists
Established 1833
91 Fulton Street New York City

Christmas Business

Every December I see the department, jewelry and cigar stores doing a land-office business. It strikes me that the druggist deserves a bigger share of this Christmas coin.

Here's one sensible suggestion for building up the gift idea for your store. A live wire druggist told me about it.

Last year he featured the Mennen Combination for Men as a Christmas present for dad. He put a rubber band around a tube of Mennen Shaving Cream and a tin of Mennen Talcum for Men.

His lettering man got up a neat, small card to go with it. The whole thing occupied only a little space on his counter and in his window—and it brought him a lot of business.

Here are a couple of suggestions for the card:

Merry Xmas
for Dad
if you give him this Mennen
Christmas Combination

For Him!
Christmas Combination
that men like

Jim Henry (Mennen Salesman)

The Mennen Company

Newark, N. J. **U. S. A.**

PRESCRIPTION CHEMICALS

BISMUTH SUBNITRATE. Our article is unusually bulky, white and handsome in appearance, free from arsenic and other injurious impurities and is an ideal product for dispensing purposes.

SPECIFY *Mallinckrodt*

MALLINCKRODT CHEMICAL WORKS

ST. LOUIS PHILADELPHIA NEW YORK

INTERESTING TO PHYSICIANS

You Will Advertise Your Business

By Carrying Our Specialties In Stock As Follows:

		Dozen
Benzaldehyde and Benzyl Benzoate—Miscible, Solution	(2 fl. oz. bottles)	$ 9.00
Benzyl Benzoate Gelatin Globules, 5 minims each	(25 in tube)	9.00
Benzyl Benzoate—Miscible, Solution	(2 fl. oz. bot.)	9.00
Benzyl Succinate Tablets, 5 grains each	(40 in tube)	9.00
Bulgara Tablets	(50 in tube)	9.00
Dentaphen	(1 fl. oz. bottle)	9.00
Enteric Glycotauro Tablets	(72 in tube)	9.00
Glycotauro, Cascara and Phenolphthalein Tablets	(50 in tube)	9.00
Lutein Tablets, 5 grs.	(45 in tube)	27.00
Lutein Tablets, 2 grs.	(100 in tube)	27.00
Lutein—*Corpus Luteum*—Powder	(1 oz. in bot.)	42.00
Lutein—*Corpus Luteum*—Solution Ampules	(6 in box)	15.00
Mercurochrome—220 Soluble (Powder)	(10 gm. bot.)	16.20
Mercurochrome—220 Soluble Tablets, 4.6 grains each	(30 in bottle)	16.20
Mercury Salicylate Ampules, 1, 1½ or 2 grs. each	(12 in a box)	15.00
Meroxyl-253 Tablets, 2.3 grs.	(30 in bot.)	16.20
Ovarian Residue Tablets, 3 grs.	(50 in tube)	9.00
Ovarian Residue Powder	(1 oz. in bot.)	12.00
Ovarian Residue Solution Ampules	(6 in box)	12.00
Ovary (Whole) Tablets	(50 in tube)	13.50
Ovary (Whole) Powder	(1 oz. in bot.)	24.00
Ovary (Whole) Solution Ampules	(6 in box)	12.00
Phenolsulphonephthalein Ampules	(10 in a box)	15.00
Phenoltetrachlorphthalein Solution Ampules, 2 cc.	(8 in box)	18.00
Sodium Chlorid Tablets, Enteric Coated, 1 gram	(100 in tube)	9.00
Thyroid—Glands Desiccated, U. S. P.—Tablets, 2 grs.	(100 in tube)	9.60
Thyroid—Glands Desiccated, U. S. P.—Tablets, 1 gr.	(100 in tube)	7.20
Thyroid—Glands Desiccated, U. S. P.—Tablets, ½ gr.	(100 in tube)	6.00
Thyroid—Glands Desiccated, U. S. P.—Tablets, 1/4 or 1/15 gr.	(100 in tube)	4.80
Thyroid—Glands Desiccated, U. S. P.—Tablets, 1/30 or 1/100 gr.	(100 in tube)	4.80
Thyroid—Glands Desiccated, U. S. P.—Powder	(1 oz. in bot.)	12.00

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is used in place of phenol by dentists, eye, ear, nose and throat specialists. Safer! Better! Non-irritating! Never makes scars!

An active antiseptic-analgesic, $1.25 less 15% per oz. g. s. bot. to the trade. Most jobbers have

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It stands alone

Unguentine—strongly antiseptic

THAT Unguentine has strong antiseptic and germicidal action has been conclusively demonstrated in our Research Laboratories by rigid bacteriological tests against cultures of staphylococcus pyogenes aureus. This microörganism was used because it is relatively more resistant than most other pathogens and is the one responsible for most carbuncles and furuncles, as well as many localized infections.

The germicidal power of Unguentine is much greater than would be required in rendering sterile any ordinary wound condition. In spite of this great bactericidal quality, Unguentine is absolutely non-irritating and in no way injurious to the tissues.

The well-known antiphlogistic and healing properties of Unguentine combined with this extraordinary power of preventing infection are in large measure responsible for the remarkable success attained by this "friend in need."

Bulletin demonstrating antiseptic and germicidal action sent upon request.

THE NORWICH PHARMACAL COMPANY
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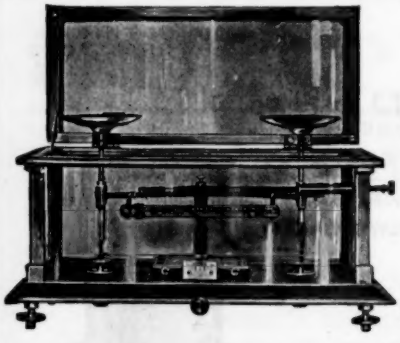
1840 STANDARD OF EXCELLENCE 1916



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The Name
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The corporate name of HORLICK'S MALTED MILK COMPANY or HORLICK'S FOOD COMPANY appears, as manufacturers, upon the labels of all Malted Food Products or Malted Food-Drink Products in which HORLICK'S the ORIGINATORS of MALTED MILK and MALTED FOOD products are interested.

To avoid imitations specify "*HORLICK'S*" in your orders

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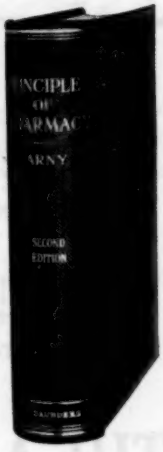
Professor Arny's work explains in an original way the practical application of physics and chemistry to medicines and their preparations, including, besides, sufficient botany to enable the student to appreciate the character of those vegetable drugs entering into pharmaceutic preparations. The subject is presented under seven divisions: The first part deals with pharmaceutic processes, a striking feature being the clear discussion of the *arithmetic of pharmacy;* the second, with galenic preparations of the Pharmacopoeia and those unofficial preparations of proved value; the third, with the inorganic chemicals including the theories of chemistry; the fourth discusses the organic chemicals; the fifth is devoted to chemical testing, presenting a systematic grouping of *all the tests of the Pharmacopoeia;* the sixth discusses the prescription from the time it is written until it is dispensed; the seventh is devoted to laboratory work, with *exercises in equation writing and chemical arithmetic.*



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For that reason no pharmacy is complete without an assortment, so as to fill prescriptions promptly. Their sale is guaranteed. All jobbers carry them in stock.

Luminal	**Adalin**	**Veronal**	**Sajodin**	**Protargol**
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IS THE ONLY CAPITAL STOCK DRUGGISTS' FIRE INSURANCE COMPANY

We have nearly a million dollars in capital, surplus and reserves for the protection of our policyholders.

We save our policyholders 25% in Premium Charges.

THE CAPITAL STOCK FIRE INSURANCE CO. OF DRUGGISTS A D F I CINCINNATI, O

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Check the one you want. Tear out this page. Mail it to us with your name and address on the margin, and we will ship the goods at once.

Free goods—free samples—free advertising
A distinctive product of Mulford quality

We make these offers because we are confident that Crystal Pastilles will ***repeat*** —for you and for us. This distinctive, efficacious and delightful form of throat medication, retailing for 25 cents a box, soon leads in sales wherever displayed.

With free goods to increase your profits, free samples and window advertising to help you sell the goods—and a distinctive product of Mulford quality, these offers are the kind that don't come often. ***Order now.***

Special Offer No. 1
With 3½ doz. boxes of Crystal Pastilles Menthymol, we will give ½ doz. full size boxes free, 4 doz. samples free.

Special Offer No. 2
With 6 doz. boxes of Crystal Pastilles Menthymol, we will give 1 doz. full size boxes free, 6 doz. samples free.

Special Offer No. 3
With 1 gross boxes of Crystal Pastilles, we will give 2 doz. boxes free, 1 gross samples free, 5% extra discount.

Mulford Crystal Pastilles
Menthymol

MULFORD LABORATORIES

H. K. MULFORD COMPANY, Philadelphia, U.S.A. 59188

AMERICAN PHARMACEUTICAL ASSOCIATION

OFFICIAL ROSTER FOR 1923-1924

(Additions will be made in succeeding issues. Addresses of all members will be found in Year Book.)

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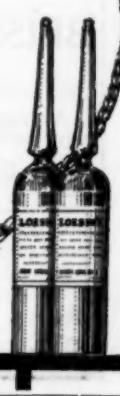

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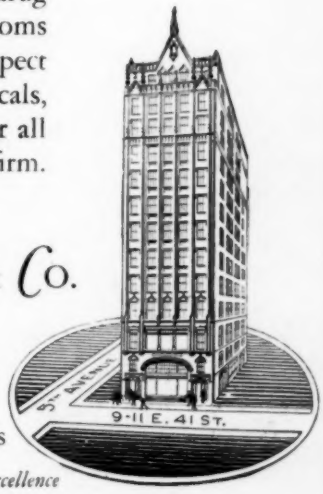

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